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Furology 101

PSU prettying

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035

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Contents

Issue 39
April 2004

Regulares

News

Irradiate fun, IBM drive woes and PCI-X 011

Opinions

Ground Zero – Depress my trends 014

Technica Obscura – Share my mind 016

Z-Access – Gaming my arse 018

Gearbox

020

Three-page nifty kit guide, just for you!

Hotbox

024

See the twinkling lights of case-mod heaven

FutureProof

026

It's the future of tech! Check out *Atomic's* super-new section!

Reviews

046

Benchmarks 048

Framerate 050

PowerColor A300M-E1384 052

Samsung SyncMaster 172X 052

ELSA GLADIAC FX 935XT 055

Gigabyte GD-1703BP 056

Uneed DIGN Home Theatre HV7 056

Nebula DigiTV 059

Samsung VFD IR 059

Artic Cooling VGA Silencer 061
Altec Lansing FX-6021 061**Games** 062

Scanner 065

Engine Room 068

NFL Street 070

Armed and Dangerous 070

Final Fantasy X-2 071

Wallace and Grommet in Project Zoo 071

I/O 072

If you fix it, they will come.

Windows Tweaks 074

Win-like tweaks by Simon The Peppercorn.

Boost your PC like Megaman!

Linux Tweaks 075

Peter 'Linux' Sbarski tweaks for pleasure.

Modjitsu: Couch Potato Project Pt 1 076

Ron Prouse goes gets high on the fi. Come on in and join him.

Modjitsu: The Molex project 083

Feel the PSU power with Phil Chia.

Fallout 090

John Simpson wonders how you like them apples.

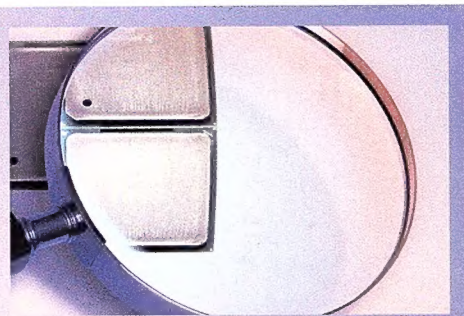
Free stuff

**Competitions** 086

Some things in life are free. Like comps.

Subscriptions 088

More prize goodness, in sub form.



Prescott – straining the silicon

024

We love CPUs. Given enough time, a coat-hanger, the sharp end of a toothpick, and McGuyver, you can do pretty much anything. This includes saving lovely ladies from exploding mineshafts.

Intel's latest lady-saver, the Prescott, looks to be a stunner. Not only have we a 90nm die-shrink on our hands, we're also dealing with a doubled L1 and L2 cache. This has to equate to more speed over the old Northwood core. Right?

James Wang set out this issue to find out. Have a look see at this month's detailed X-Ray of Intel's new CPU architecture, and find out if it makes the cut. Because if it doesn't, we'll be forced to cry... but only a little.

Feature: The new multimedia

036

In this day and age, everything is about networking – networking people, networking computers, and now, networking all your media gear, including your once media-vacant PC. John Gillooly gives this emerging trend a thorough once-over.

The future is now. Well, OK, it's not now, but it will be soon. Be prepared and read our new hi-tech section FutureProof. It protects and serves!

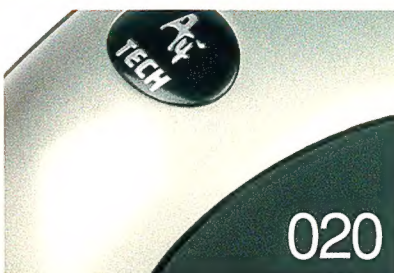
FUTUREPROOF
026

NEW sections



Had enough of tweaking your Windows box till it spits at you in an semi-angry fashion? Then grab a Linux distro and try out some of Peter Sbarski's awesome Linux tips.

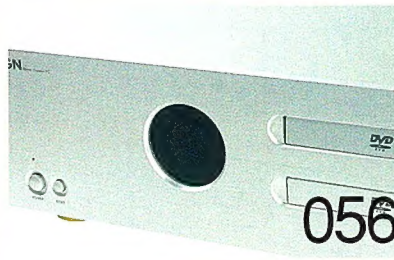
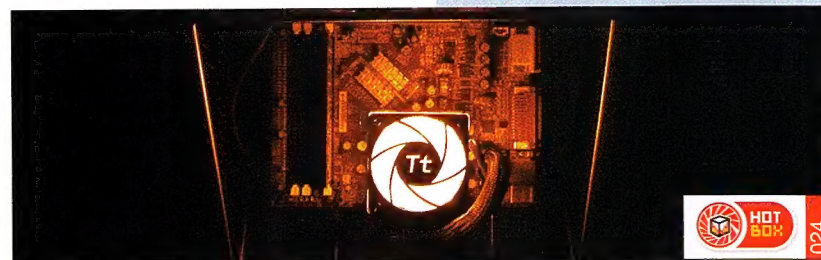
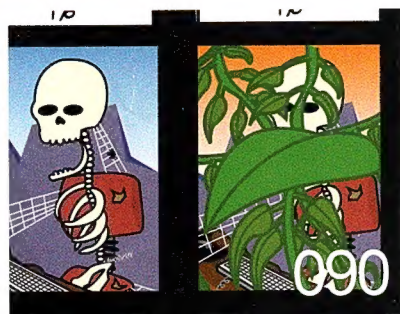
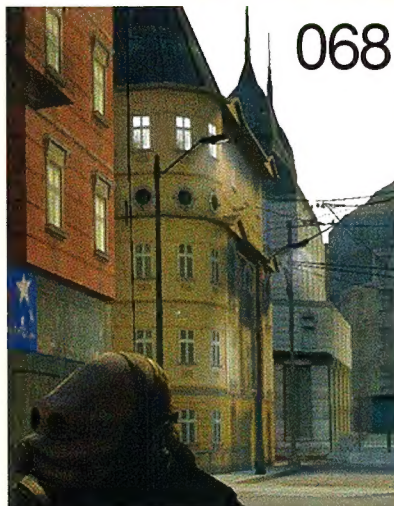
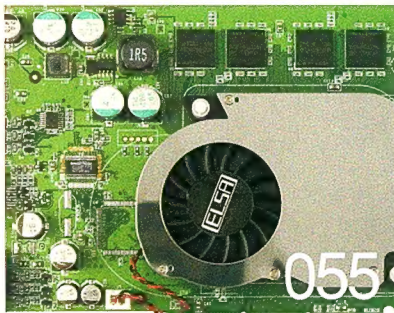
075



Head to Head

Science meets nanofiction 030

When Richard Feynman spoke of manipulating atoms almost half a century ago, he couldn't possibly have guessed how much nanotechnology would affect us today... that is to say hardly at all. While nanoparticles have found use in sunscreen and other less than exciting applications, society still harbours a largely incorrect view of where nanotech is heading. This is thanks to colourful science fiction – from TV and movies through to literature. Logan Booker went out this month to set the record straight.





The badger box



Most months in our somewhat legendary Hotbox section, there is at least one PC designed specifically as a media player. For many years

we've seen so many Atomicians build tidy little MP3 warehouses and movie archives, which sit pretty in the living room and provide suitably *Atomic* levels of computerised entertainment.

Well, as it does, the world has caught up with us. We're currently seeing the whole 'media centre' PC formalised and pushed hard into the mainstream. From the smart designs we see emerging in the mini barebones form factor, to Microsoft's big deal Media Center OS. Right now, on the whitegoods shop floor, sales assistants are starting to push digital VCRs – when for years we've built our own machines that do a better job. The MP3 phenomenon has infiltrated the mainstream in a huge way, but we've been at that for years too.

We know too that Bill Gates has been desperate to have a 'black box' in the living room as a digital entertainment hub. WebTV was a dead horse, while ironically the Xbox has had far greater success with the hardcore fans as a media centre. But, by sidestepping the misguided attempt to produce a hardware solution, and focusing on its strength as an OS developer, Microsoft is about to finally achieve the dream of providing the home entertainment box via its Media Center.

It's a pretty sure bet it'll take off. It's too compelling not to. There is a buzz of activity from all corners of the IT sector about Media Center. A lot of it is ambiguous and often old news. So, we threw John Gillooly at the case and he's come up with this month's most excellent cover story on the topic. It's a great story.

At *Atomic*, we give you the full package holiday, not just a night out. After reading John's piece you'll be inspired to get the theatre going on. So, we're laying it on, *Atomic*-style, to give you just that! We're attacking with two neat battle tactics. First, Ron Prouse is back, starting a three-part tutorial for you to build the ultimate media centre PC. Nobody mods like Ron, so you can expect him to go to extremes with his box. You don't have to go the full nutso with the tutorial, but there will be a fistful of tidy ideas that you can incorporate into your own media box.

And second, on the front cover is *Atomic*'s counter-attack to the Microsoft Media Center solution. The *AtomicTV* CD! Using a Linux OS, our newest legend Peter Sbarski has built us a bootable chunk of genius which is all you'll ever need to run your living room PC. It's everlasting, fully featured and free. Now that rocks. Chuck it in and see for yourself. The design is tidy and streamlined, the functionality powerful. It'll do a lot more than play Gay Bar or Badgers too. Naturally.

Exciting newness this month starts with our new regular 'FutureProof' section. It's the big tech look-ahead, and it's very *Atomic* indeed. Elsewhere in this fabbo issue we've got Mr Sbarski starting up another all-new section – Linux Tweaks, on page 75. It sits beside and complements Windows Tweaks (the page formerly known as Phr33x Tw33x), and serves out the Linux lovin' we've always meant to give you. There's an email addy on the page, so please give us your feedback!

The last chunk of giving this month comes from you. You've voted in the *Atomic Reader Awards* and we're very excited to give you the results this month in a special section. You gave your time and opinions and now sit back and watch as the good companies cop the sugar and the poor ones are forced to lift their game. You have that power – nobody else knows gear like Atomicians – and the IT industry knows it.

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atomic

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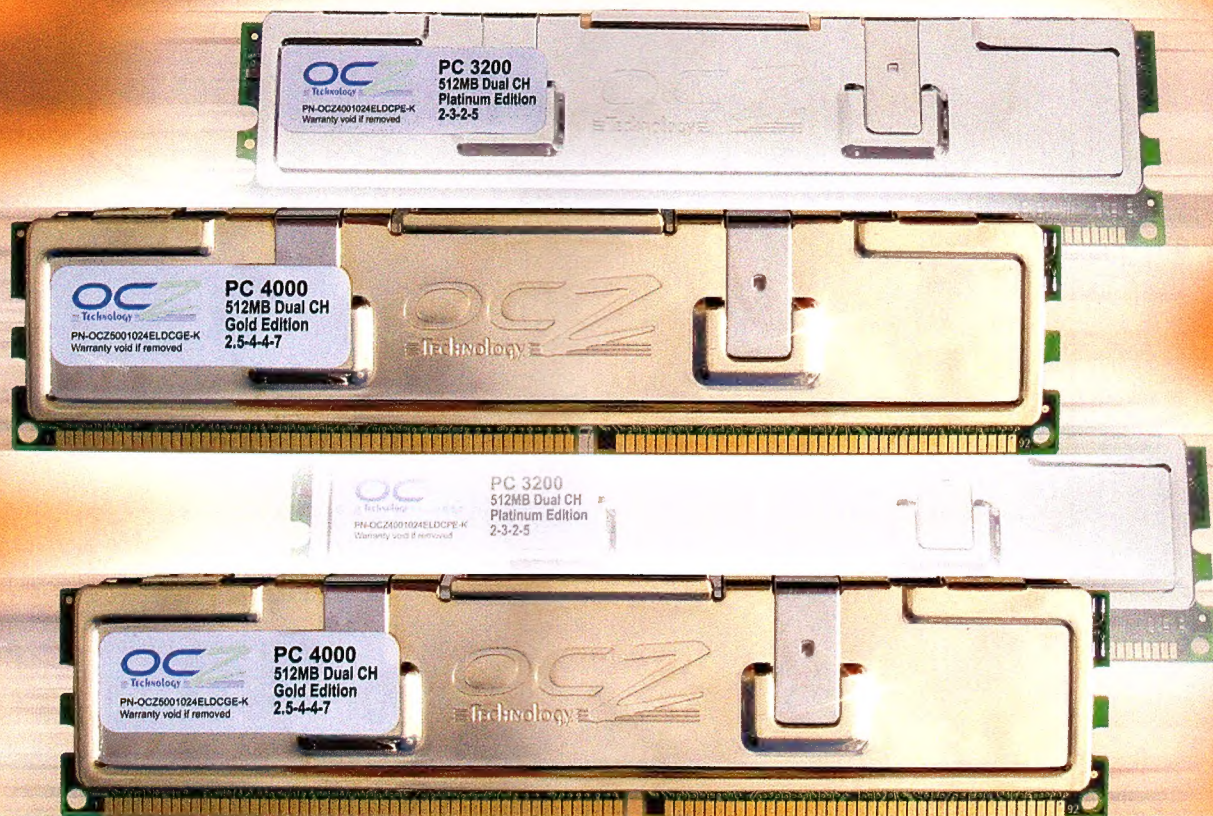
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AtomicTV – fusing Atomic and Linux

Exploit your PC! Sure it's just a computer, but computers can do heaps of things. . .

Readme first

Step one: Place the AtomicTV CD into your CD-ROM drive. Reboot (or turn on) your system.

Step two: Once the CD is booted, you'll be presented with a prompt. At this prompt:

- * Press Enter to run AtomicTV from the CD, or
- * Type in 'knoppix alsa dma toram' to run AtomicTV from memory. Recommended only for systems with 256MB or more RAM.

Step three: Wait patiently for AtomicTV to load – it may take a substantial amount of time, depending on the specifications of your system.

Step four: When AtomicTV has loaded, you'll be presented with what looks like a blank desktop, with the Atomic 'O' circuit board background. To access the different features of the operating system, just right click your mouse on this desktop. A menu will appear, from which you can access the MythTV front-end.

Step five: For the sake of all thing sacred, read the step-by-step guide that's available from the desktop right click menu! It's a must!

The AtomicTV Linux CD is based on the wonderful KNOPPIX distribution (v3.3). The distribution has been heavily modified and delicately crafted to suit the multimedia needs of the Atomic community.

It comes complete with MythTV, an all-in-one multimedia gateway, as well as a bunch of other useful applications including xine; xmms; mplayer; tvtime; xawtv and dillo. However, the best thing about the AtomicTV Linux CD is that it can fit into a comfy 256MB of RAM. Along with all this, the CD comes with a SAMBA client that will automatically detect and config mount points for most partitions on your hard drives – all you need to do is mount them (eg: mount /mnt/hda1). Note that a hard drive isn't required for the AtomicTV CD to work – download or stream movies, music or any other content directly over a network. If you have a compatible TV tuner card, MythTV will allow you to watch and record TV and it has the capability to download the latest TV guides from the internet.

DISCLAIMER:

Neither AJB Publishing nor Atomic magazine, nor the creator of the AtomicTV CD, can be held responsible if your system is damaged, borked, fried or rendered inoperable by this CD. None of the aforementioned parties can provide technical support for this CD.

By using the AtomicTV CD, you agree to the above terms.

Other features include the ability to look up news feeds, check current weather, rip CDs, and play DVDs for any region. And there's plenty more capabilities to discover. If you happen to bork something, you can always reboot and start from scratch.

There are two ways you can use AtomicTV – you can use the default mode by pressing Enter at the first screen, which will partially install Atomic Linux to RAM. Using this mode, you'll need to keep the AtomicTV CD in the CD-ROM drive to load other applications. The other option is install AtomicTV fully into RAM. You'll need at least 256MB of RAM for this, (512MB recommended). You can then eject the CD and use your CD/DVD drive for other tasks.

In order to load AtomicTV completely into RAM, do the following:

1. At the first boot screen type: 'knoppix alsa dma toram' and hit Enter. By default, AtomicTV will automatically load 'ALSA' sound support and turn on DMA for all drives. However, because we are explicitly loading AtomicTV fully into RAM, we need to separately specify that ALSA and DMA should be turned on. Loading ALSA and turning on DMA is highly recommended, though if you find that AtomicTV is unstable you can try turning them off.

Once you boot into X-Windows you will need to right click on the 'Desktop'. This will access a menu. From the menu choose Instructions and then click on "Introduction and Step-By-Step Guide". This will give you instructions on how to set up MythTV. Just remember if you get stuck in MythTV have a look at the Settings area in the MythTV front-end. This is where you can config paths to your files and toggle different features. If you find that movies or TV playback is slow, or doesn't play at all, have a look at the troubleshooting material given in the Step-By-Step Guide.

A small note about graphics cards: To play videos (including DVDs) and watch TV properly you will need to have X-Video Extensions (xv) enabled. If you have a standard NVIDIA graphics card, then it is likely that AtomicTV will detect it and turn on xv automatically.

If it doesn't, then you should update your NVIDIA driver. Right click on the desktop, select System and click Update NVIDIA Driver. Ignore any error messages and wait for X-Windows to restart.

If you have an ATI-based graphics card then, unless it is very old, you'll need to run through a driver setup program. In AtomicTV you will need to access the Desktop menu, select System | Update ATI Driver. Follow the prompts and once X-Windows restarts you should have xv enabled.

To find out whether X-Video Extensions are present on your system in xterm (right click on the Desktop, select Terminal | xterm) type 'xvinfo' and hit Enter.

Finally, to control the sound volume, try 'alsamixer'. It can be found by going to System and then ALSA in the menu.

If X-Windows fails to load with an error referring to the X-Server not working with your 'card', reboot the system, and at the load prompt enter 'xmodule=vesa'.

System requirements

Processor: Intel-compatible CPU (PIII or Athlon recommended for watching DVDs).

RAM: At least 256MB for a full RAM or 128MB for a partial RAM installation. Additional RAM will improve performance.

CD-ROM: Any bootable CD/DVD-ROM.

Graphics card: Any VESA-compatible graphics card. Peripherals: Any standard PS/2 or USB mouse and keyboard.

HDD: Not required.

WHY YOU WANT ME

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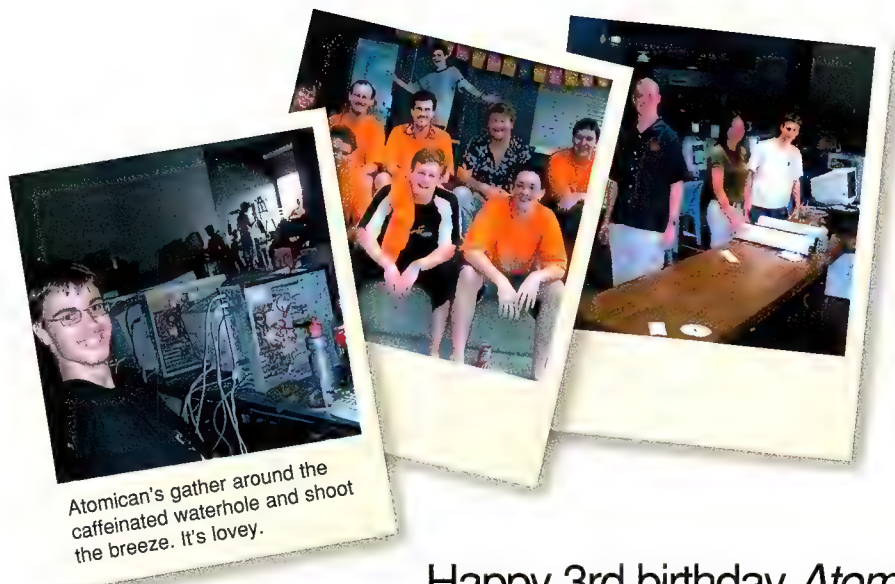
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Atomican's gather around the caffeinated waterhole and shoot the breeze. It's lovely.

Happy 3rd birthday *Atomic*. Irradiate!

Atomic Year 1 had WorLAN GibGragCON '97, Atomic Year 2 had Fallout, now in Atomic Year 3 we have Irradiate and the lovely fun just keeps growing.

Brisbane: home of the best damn *Atomic* party yet. How the good people of Queensland can pack so much fun into one short weekend is beyond us. Following on from the other apocalypse-themed *Atomic* birthday parties, Irradiate brought its own distinct style to what has become a yearly meeting of the strange, the wonderful, the geeky and the purely *Atomic*.

While the heat may have been almost unbearable it did not stop some excellent *Atomic* sporting moments. Frisbeemark, an *Atomic* birthday institution involving the throwing of hardware, once again stole the show. Special mention goes to SmithjoeMP who, swinging a mouse for several minutes before releasing, managed to almost kill himself.

The new craze that swept Irradiate was the racing of remote control cars. Some opted for the basic models while some models, such as Vortex's, bordered on the insane. Highlights here had to include some insane ramp-jumping by Lambo, and the unfortunate injury to Hex's toe.

Unlike the two previous events, Irradiate's LAN played a definite second fiddle to the games and outdoor shenanigans on offer. A good LAN setup with administrators resplendent in their orange T-shirts ensured lots of heavy fragging. And what would an *Atomic* LAN be without something blowing up? Having travelled all the way from Sydney, along with many other interstate Atomicans, Ladydeath and her power supply had a falling out. R.I.P Ladydeath's power supply; it went to a better place – with a bang.

Correction

In *Issue 38's* Framerate our test of the PowerColour RADEON 9600XT Bravo stated that the memory was 2.5ns, because that's what we were told by PowerColour and Australia IT. We've since discovered that it was 2.8ns RAM. Australia IT has since supplied us a 2.5ns version of the card, which we will test in *Issue 40's* Framerate. Australia IT apologise for this error. They assure us that all RADEON 9600XT Bravo cards now shipping carry the 2.5ns RAM.

Those without PCs, or who generally preferred a bit of play, took to the outdoor basketball court and its assorted diversions. A massive game of frisbee on the court (which literally burnt our feet) was quite a feat. Ben showed he is still the wannabe frisbee master of all time, while Moz proved that he is definitely the master in all respects.

Those who remember the birthday cake from Fallout will be pleased to know that it made a return in all its Irradiate-flavoured glory. Seeing a crowd of geeks clamour for birthday cake is quite a sight.

Fr3nzy's breakdancing left us speechless. Utterly speechless. Brilliant.

By the end, most people were lazing about in chairs outside, soaking up the moonlight atmosphere, and contemplating another year of *Atomic*. It was quite powerful; a real show of how a magazine can bring together people from all walks of life (even Haunt), and celebrate such an event in style.

A huge thanks to Squeeks, Quadlex and the whole organising team; this was a true *Atomic* event. Bring on another year!



Atomicans travelled across the country to sit in a dark corner alone with their toys.

ShortCircuits

■ NVIDIA has announced that it will release a new series of video chipsets designed for use with PCI Express, based on the GeForce FX. PCI Express, a new interconnection protocol pioneered by Intel, will provide cards with much-needed IO bandwidth. The new series of chipsets will sell under the moniker of GeForce PCX, with the PCX 5950 targeted at the high-end market and the PCX 4300 catering to the low-end. While PCI Express is not specifically designed for video cards, it is the hardware that will make most use of PCI Express' improved performance, according to the company. NVIDIA said it expects products featuring GeForce PCX chips to hit markets in the second half of the year.

■ IBM has again come under fire regarding the unacceptably high failure rate of its GXP hard drives. What has recently revitalised interest is a new report that says IBM was fully aware of the flaws. In late 2001, a class action lawsuit was filed against IBM; its basis was complaints about the GXP-series. The report claims the company continued to not only sell, but also mislead customers about the reliability of its drives. According to the report 'An IBM manager agreed that the failure rate was "beyond normal" but refused to replace ... hard drives as they were outside the warranty period.' The report went on to say that IBM also misled bulk drive purchasers Quantum and Compaq. Due to poor sales, the hard drive division of IBM was sold off to Hitachi in 2002. IBM however continues to face litigation from unhappy customers.

■ Another Microsoft product flaw has been unearthed, the latest bug allowing the erstwhile hacker to arbitrarily execute code using a weakness in Internet Explorer 5's bitmap routines. According to sources, it's the first flaw to be discovered through the examination of the leaked Windows 2000 and NT source code. At the time of writing, a hotfix for the vulnerability was unavailable.

The doors of (gaming) perception

Little can be said for the evolving nature of games. The industry has grown to the point at which games are being made faster than ever; offering everything from golf to mass murder. While the games have undoubtedly changed, has the experience evolved with it?

Take a look at the first person genre. We have between four and 16 weapons of varying power, from melee to high projectile, and a few obligatory scoped rifles for balance. Simple geometric maps depict a physical state of existence populated by intelligent (and sometimes not so intelligent) foes and allies. These are the basic building blocks of any FPS gaming experience.

Designers have perceived the world around them, transposed it into an electronic representation, warped it with various themes and called it a 'game'.

Forget calling it a game for a moment: this is simulated reality. As such, all simulated reality is a reflection of the perceived reality of designers. Famous LSD researcher Timothy Leary once said that 'this reality we perceive; it's nothing more than a consensual hallucination'.

That is exactly what we've been having; a consensual gaming experience. It isn't time to find a new genre; it's time to find a new way of playing; a new state of mind. This is where the gamers come in.

We all know what it's like to sit down and play a few hours of Quake, Battlefield 1942 or Starcraft. You sit down to play and, depending on certain factors, you receive a 'gaming-rush' of varying intensity. Regardless of the game, the symptoms of this rush: tight chest, sweaty palms and racing heart, are the same.

Gaming empires like Valve, EA Games and Novalogic have all become industry behemoths thanks to their ability to give the gamer this rush. But still this is due to the way in which the games are made, using the same fundamental building blocks from reality for every game. All game environments must be reflections of a type of reality. Isn't it time we asked for more than the same old frontal-lobe gaming experience?

The first thing that comes to mind is the use of hallucinogens and other drugs whilst gaming. It's a long standing joke in e-sports is that smoking certain legal plants and roots apparently gives you killer aim, and enhances your visual reception. Could drugs one day be used as a commercial selling point for the latest games?

Imagine finding a few LSD tabs bundled with the latest games. Imagine instructions telling you to 'take two tabs and insert disc one to continue'. You'd be kind of scared.

We're not advocating some LSD-induced psychedelic fragfest here, but what are the possible implications of drugs in e-sports and general gaming alike? Will we soon have to fight drug testing in e-sports?

E-sports and gaming in general is a journey through the mind. Whether games will ever break the conventional mould of design is dependant on the human mind's perception of our world.

Whether through substances (legal or otherwise), or a total re-think of design perspective, games must change, and quickly. The alternative is to face a death akin to the impending doom of reality television: mediocre and messy.



What's Hot



- Linux source – open and secure
- WRX – drive to end all drives
- Irradiate – Atomic super fun!
- Dr Simon Brown PhD – Kiwi science

What's Not



- Windows – leaky like a rusty can
- GXP – read head's dead... again
- Irradiated – where's the Rad-Away?
- Dr Derek Smart PhD – doctorate in mushrooms

atomican

You can get it hacking. You can get it cracking. You can get it overclocking your PC...
A hard earned thirst needs a big cold beer.
And Atomic's best beerdrinkers are the Vics...

So it was entirely appropriate that Victorian Atomicans, led by forum hero Trev99, organised Beer-a-thon 5, at Melbourne's Puggs Mahone Irish bar.

According to what's been pieced together from blurry digital photos and even blurrier analog memories, this premature Oktoberfest went off like a tanker full of overcarbonated Guinness. And, though the hangovers have long since abated, several disturbing questions remain...

Did Lambo do the gentlemanly thing and phone Hex the next day? Or at least send him flowers? And what was up with Khrushchev's shirt?! Was it the work of sadistic seagulls? Japanese pr0n stars? While the man in question remains tightlipped, you can draw your own conclusion at

www.atomicmpc.com.au/forums.asp?s=1&c=1&t=31927&p=0

Speaking of pr0n stars... Actually, no, it would be best if you *didn't* mention pr0n around Tonto_1337's house for a while.

You see, ever since his father caught him re-enacting that infamous scene from *American Pie* – without the actual pie – his family has been a little sensitive on the subject of pr0n.

Share Tonto_1337's awkward moment at forums.asp?s=1&c=1&t=31167. And yes, he assured us he typed the thread with *both* hands.

Another unsuspecting teen who is good with his hands featured in NihilisticAutomaton's Photoshop Challenge (forums.asp?s=1&c=1&t=31666). The challenge was a simple one: take a random photo from the internet and then Photoshop it into something vastly more entertaining. Mind you, this proved surprisingly difficult when the randomly selected photo turned out to be the bastard love child of Dan Rutter and *Rocky Horror's* Riff Raff, practicing home metallurgy.

Ah, the Atomic Forums... weird one day, even weirder the next!

As the month drew to a close, a team of dedicated Atomicans was endlessly debating how to mod the PC being donated to baby Bailey (see January POTM). Linux or Windows? AMD or Intel? Case fluffly or Wiggley? Design practical or whimsical? At last reports Bailey was already recovering nicely from his corrective surgery. So visit

forums.asp?s=1&c=1&t=31903&p=0 and tell the modders to *get on with it!*

Virt

POTM 39

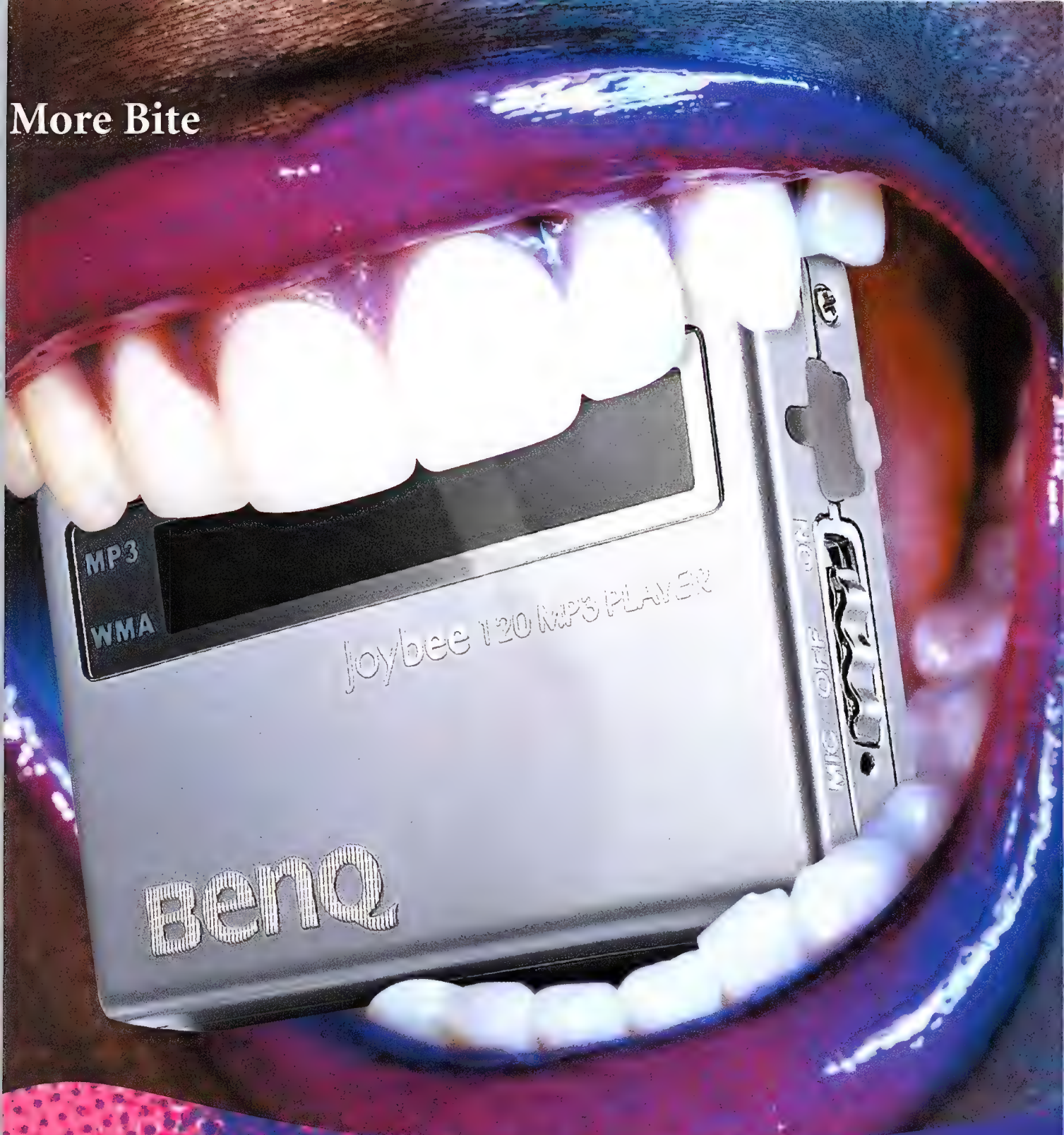
'So you want to play your console on a monitor...'
By Ug Lee

forums.asp?s=3&c=13&t=1889

Ug Lee's been the Atomic console champion since day one of our little universe. His latest contribution to the cause is a wonderfully impressive guide for marrying a console to a PC. Wedded bliss! Now, where's he going to plug in his new Logitech MX700?



More Bite



Joybee 120 Noble Silver, Passionate Orange & Radiant Green

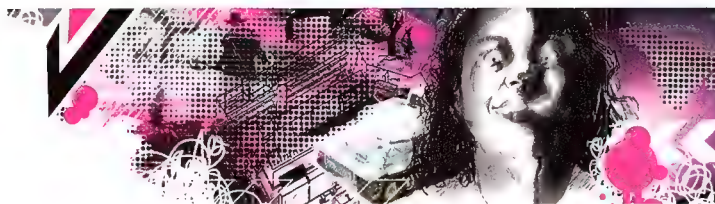
Joybee 150 Noble Silver, Passionate Orange & BenQ Purple

Joybee

Introducing the new Joybee compact MP3 players from BenQ with superb sound quality, stylish design and a range of funky colours. The Joybee's are available in two models and come equipped with 128MB or 256MB of memory. Download your favourite songs from your computer, listen to your FM radio or record from your PC. You can also use your MP3 player for data storage. Both models support MP3, WMA & WAV audio formats. Joybee, the latest Personal Digital Audio players.

BenQ

Enjoyment Matters



Less go, more show

What's the point? Asks Dan Rutter. Exactly! He rhetorically replies to himself, achieving nothing, apart from passing time aimlessly.

It's against my basic nature, but I'm quite happy about the widely reported Depressing Current Trends in the performance computing market.

For instance: the home video game market is moving away from PCs, with their zillion and three quirky hardware configurations and substantial piracy problem, to nice standardised less-oftenwarez consoles. And, in a related development, PC gamers stepping off the upgrade path. Or, at least, standing still on it for a while.

Games are still driving many PC enthusiasts to get the shiniest new processor and video card and motherboard with UV-reactive trimmings. But more and more of us are asking whether there's really any extra fun to be had just because we can now turn on all of the DirectX 9.0 stuff and run at 1,600 x 1,200 with 8x FSAA. (Particularly when we then get our arses whipped online by a 14 year old whose every waking out-of-school hour is spent playing our game of choice, in 800 x 600 jaggy-vision on his 750MHz Duron box. He's cheating, of course. Sure he is.)

The world's now not exactly short of people who've owned a high end GeForce FX or RADEON for a year now, and who re-brained their perfectly good 1.6GHz Athlon box into a New Hotness overclocked P4 2.4C several months ago, and can't now quite remember why. Like me, if you're looking for an example.

Oh, sure, I gots da mad framez pa' second yo, and I can unzip 3.1GB of web logs from a 238MB archive in a minute and a half. Which is about, um, eleventy kanillion times faster than the 40MHz Amiga I had when George H W Bush was POTUS. But, y'know, woo-hoo to that. It's not as if the new machine understands what I say and replies in Majel Barrett's voice.

All of the personal computer tech companies whose stock market credibility hangs on double-digit sales growth every year are, right now, even more enthusiastic than usual about finding new

things for ultra-fast PCs to do, so they can say something other than 'just because' in their why-you-should-upgrade advertisements.

Whether they'll come up with a genuinely new MFLOPS-munching craze in the near future is open to question. Only so many people are interested in home video editing, and I've been hanging out for consumer-market virtual reality gear since I was using the abovementioned Amiga.

... so they can say something other than 'just because' in their why-you-should-upgrade advertisements.

In the meantime, though, the slackening of must-go-faster mania means computer-gear developers ought to have some more time to concentrate on user interfaces. This, people, is a very good thing.

I don't know about you, but I spend a lot of time sitting in front of this screen. A lot of time. All that time has blinded me to some extent to the myriad awfulnesses of Windows, and WinXP is certainly a great big improvement over Win95 (or, if you want to be really perverse, Win3.0...), but it ain't exactly news that Microsoft has a way to go yet. Apple are further ahead, but not *that* much further (www.happynowhere.net/mac_parody.htm).

When everybody's talking processor power and screen resolution and number of Robert Ludlum novels per second, user interfaces invariably fall by the wayside. Good interfaces are *hard*. A decent user interface can take more development time than the hardware did, and you'd better not let the hardware engineers design it.

Many companies therefore find that there's a lot to be said for, well, *not* doing interface work.

Make widget that can do many things. Provide some way for widget owner to direct widget to do these things, provided said widget owner has read 243-page

Quick Start Guide and has a lot of spare time to navigate 28-line menus on a 3-line display. List widget's functions on brochure. Package widgets for sale. Remember to include bottle of Scotch with widgets being sent to reviewers.

(Seriously, guys. Remember.)

When an industry's customers and marketing departments are slaving along in a positive feedback loop of specification-mania, as the PC industry usually is, the above process results in products with gigantic feature lists and incomprehensible user interfaces.

Don't even *start* me on mobile phones. Just look at MP3 players.

There are a few MP3 players that aren't much harder to use than either


flavour of iPod, but a fair slice of the We're Not Worthy-ing aimed at the iPods is justified. Glory, hallelujah; someone knuckled down and made an MP3 player without a freakin' monkey-puzzle interface.

Apple took until late 2001 to get the first iPod to market. There'd been plenty of hard drive digital music players before then, and iPods have never offered the most storage per dollar. If you're not a complete fashion victim, there's now a good case to be made for several other similarly specced players – but that's mainly because the iPod spurred other manufacturers into making their products more usable.

It takes a trail-blazing company like Apple to focus on usability when everyone else is just coming up with more spec-sheet boxes in which to put ticks. But when consumers are scratching their heads and wondering exactly what it is they might want to do that a \$1,500 chain store computer can't handle, everyone else in the business ought to start thinking harder about usability.

There *will* be another craze along soon enough to give us all more of a reason for our muscle car PCs. But in the meantime, I'm hoping for some products with more points assigned to Charisma than Strength.

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Using the Sony DVD burner is so easy
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Sony's smart new multi-format DVD Burners come with their own easy-to-use multi-media software. So in a couple of clicks, you can record and play CDs and DVDs, store pictures, make your own movies and custom audio compilations. Which means the only thing easier than using one, is choosing one. Visit www.sony.com.au or call 1300 13 SONY (7669) for more information.





The world's an audience

There's a new power in the world that can make or break a business, and bring others to their knees. Ashton Mills discovers the power of mindshare, and those who wield it.

It was inevitable that, as the internet population grew that there would be such sites of a particular interest that they could garner an audience of millions. Be it a portal such as eBay, or a news service such as CNN, it's obvious such sites would, naturally, attract a large audience. But unlike a business in the real world, the audience isn't restricted to the locality, the state or even the continent. On the web, the audience is global. A newspaper may well have an audience of hundreds of thousands on the stands, but online it could have a readership of millions.

Not surprisingly, there are sites on the web of global interest and which command a staggering amount of eyes. Sites like eBay or Slashdot have millions of viewers, but even these pale in comparison to king Google. And it makes you wonder, just what could you do with all that mindshare?

Slashdot, being a news site, has a habit of linking to interesting stories all around the world. And when they do, and it's a hot topic, the sheer volume of redirected traffic to the site that is the source of the story is more often than not brought to its proverbial knees. In fact the process now has a home in our online lexicon – the *Slashdot Effect*. Any sites unlucky enough to be listed on Slashdot and pertaining to anything even remotely mainstream can expect to receive a sudden and massive rise in hits. Whether the site crumbles under the load is a matter of the quality of the web server and the number of interested Slashdotters clicking to take a look. But few sites survive a good Slashdotting.

A great example is when the *Return Of The King* trailer was released. Take a) a popular movie bound to resonate with every geek on Earth and combine with b) the most popular geek-centric news site on Earth reporting its existence and you get c) *ROTK* trailer mirrors crushed under the demand, crying like schoolgirls.

Then there's the once innocuous University of Swinburne, Australia, department of astrophysics and supercomputing site which held images of quaterian fractals. In February this year Google made a fractalised version of its logo, the clicking of which displayed an image search for fractals with Swinburne University's site listed as the first and second results. Now, keeping in mind that Google gets some 200 million hits a

the load. A formerly unknown site can suddenly end up in the bookmarks of millions of people in a matter of hours. You simply can't buy that sort of marketing anywhere else.

Though that may soon change. With the success of Google Microsoft now wants a piece of the pie. Earlier this year Microsoft made a bid for Google but was turned down. This won't stop it, because there's profit to be made in running one of the world's most popular search engines, so one way or another Microsoft is going to enter the business and do what it does best. I don't blame them for trying, but I for one will question the

A formerly unknown site can suddenly end up in the bookmarks of millions of people in a matter of hours. You simply can't buy that sort of marketing.

day, we don't need a degree in astrophysics to guess what happened. Sure enough the resultant influx of traffic subsequently crashed the Swinbourne servers, and the fractal pages had to be removed. The site had been Googleblatted, the Google equivalent of a Slashdotting.

Speaking of which, the fact that the site was Googleblatted ironically made the news on Slashdot two days later and, just as Swinburne's servers were getting back to normal they were inconveniently hit by a second wave of surfers redirected from Slashdot and the site was, yet again, reduced to a wimpering mess and forced offline. One can only feel for the webmasters who had to deal with a Googleblatt and Slashdot Effect back to back.

And really, what a power to wield. Google and Slashdot are just two sites that have the ability to literally kill a server in a way in which DDOSing hackers can only dream of. While some Webmasters shake their fist when they get a mention on Slashdot, others rejoice – after all, for any business which makes its bread and butter through its website, a listing on Slashdot can make their business in one shot, if they can handle

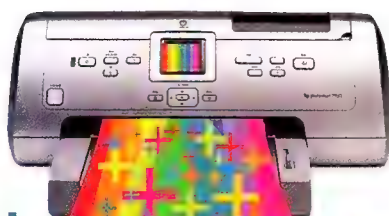
validity of any results from a Microsoft search engine. You can only imagine what might be displayed if you typed in 'Linux vs Windows'.

Regardless, the internet audience is only going to get bigger. And those who have the power to direct millions of eyes to a particular site can literally make or break it. However you cut it, that sort of ability to direct mindshare is simply unreal. At no point in human history has there been anything like it.

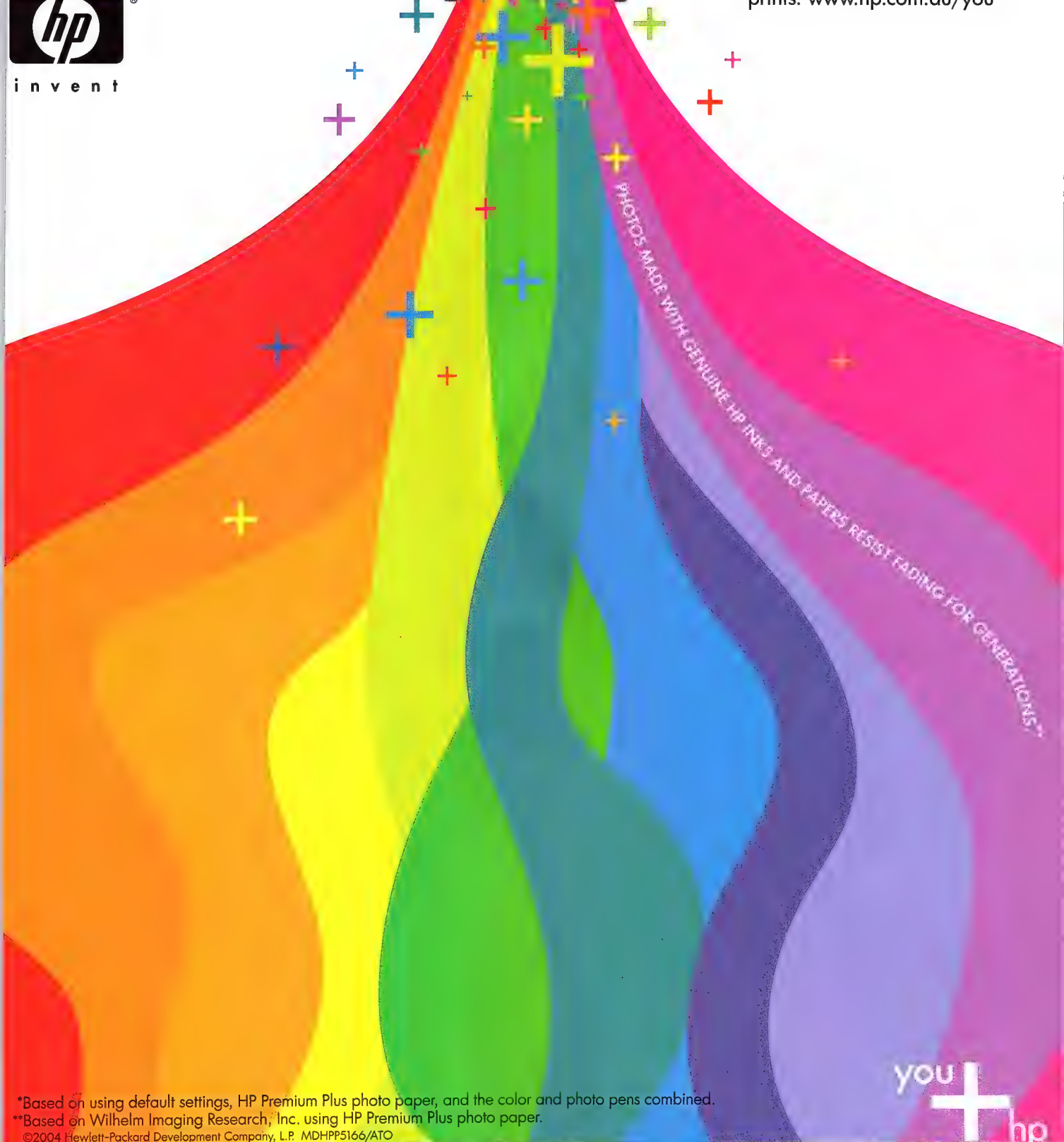
And yet it's just the beginning. Our future is already starting to fill with internet enabled devices – PDAs, TVs, fridges, just about anything wired or unwired that can benefit from a direct link to the net. And these devices will tap the unwashed (computer illiterate) millions into the net along with everyone else. And then advertisers will have at their fingertips on an audience so large, spanning all walks of life where internet devices roam, that they get wet dreams just thinking about it. Combined with the ability of popular and mainstream sites, intentional or not, to redirect the attention of millions and it's clear that those who have the ability to control all this will wield great power indeed.



YOU HAVE MILLIONS
OF FAVOURITE COLOURS.



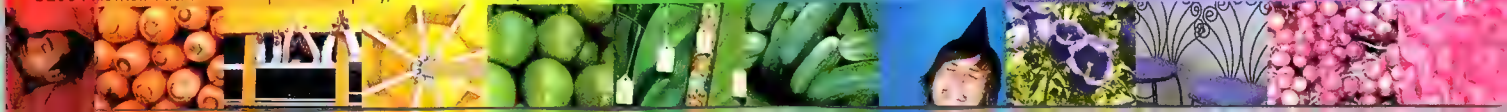
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Hard times for hardware

Tim Dean laments the pathetic state of PC gaming, but wonders what it's going to mean for all those poor corporations who make millions in hardware out of gamers.

A couple of months ago I ranted about the depressing state of the PC gaming industry at the moment, and how consoles have stolen PC gaming's thunder. I still can't see it getting any better any time soon. Given it usually takes around 12 to 18 months minimum to develop and release a game, even if PC games developers start going nuts now, we're not going to see any gold until at least 2005, maybe even 2006.

Now, this puts us in an interesting situation due to the unique nature of the PC hardware industry, especially when it comes to 3D graphics chips. Moore's Law is fast enough, but the one area of the industry that is consistently outpacing it is that of 3D hardware. At the moment we're seeing a significant release of new kit about every six to 12 months or so, and each release is pushing the envelope farther and farther away from the usual doubling of speed every 12 to 18 months.

Furthermore, what is the primary purpose of all these millions of little weeny hard working transistors but to make things look pretty when you blow them up? It's clearly games that have been driving the 3D hardware industry for the past several years, and without games, we have a problem.

But it's not only 3D hardware. There are dozens of products and industries that have fed off the immense popularity of games. Ever since AMD included dedicated floating point extensions in the K6-2 processor, and named them 3DNow!, it's been clear that other hardware manufacturers have realised the potential of games and chosen to cash in on the market. Intel was to follow shortly with SSE, and things like faster AGP standards. Then you have the component manufacturers, with all the RAM that's been sold to gamers wanting to stop their PC crunching their

way through level changes; and motherboards with their plethora of overclocking options to squeeze that precious fps out of the latest id-powered game.

And that's not all. Last year saw TFT screens outsell CRTs in terms of volume for the first time in history. According to Michael Sager, IDC analyst, 'migration to LCD displays is being aided by the decreasing cost of the technology, the

really as good as it should be, then there will be plenty of people who have been holding off for an upgrade who'll be out there spending their hard earned to get the best (probably ATI) card they can afford. But even so, what then? Or what if HL2 is guff? (I'm beginning to believe HL2 is like Team Fortress 2 – AKA: the Game That Never Existed And Never Will.)

Assuming 2004 is dead flat in terms of games, then the several games released during the year that are even half decent are going to sell like buggery. So then the industry will probably realise there's a massive market out there of desperate gamers

If people aren't compelled to upgrade their rig to run things faster and at a higher res, then what does that mean for the hardware industry?

post Y2K enterprise PC refresh, and acceptance by key markets such as the demanding gaming segment'.

And, oh, there's more. Hard disks, cases, broadband, networking, wireless, caffeine, arse massages – there are plenty of products that have seen growth that is directly related to gaming. We're talking big numbers here. Numbers with more zeros than the attack on Pearl Harbor (oooh, was that too far?).

So, if there are no good games being released, and if people aren't compelled to upgrade their rig to run things faster and at a higher res, then what does that mean for the hardware industry?

Ian Metcalf, marketing manager for BCN Technology, can see it could be time to worry. 'There's nothing really exciting happening in graphics' he says.

BCN distributes a number of brands that appeal to gamers, including Leadtek, Hercules, Creative Labs, Thrustmaster and more. Ian has already seen a slowdown in graphics card sales due to the flat year of games as well as the delayed release of Half-Life 2.

So, what does the future hold? It's fair enough to assume that if HL2 is

gagging for anything interesting, different, challenging, and not-a-bloody-lame-dumbed-down-console-port, and they'll hurtle forward and try to fill the vacuum with product. But, as I said before, it'll take a while before we begin to see the product of their toil, and the question is, can the hardware industry last that long?

Surely there'll be some casualties (*cough* NVIDIA *cough*? – nah...), but most companies will just end up using their six to 12 month product development cycles to refocus on other things. Like, maybe, the digital home. . .

So, there we'll be, sitting smack bang in the middle of 2006. The new generation of consoles are close to release, but there's not a lot of support for them yet. There's been a recent rush of quality PC games that have just been released. But all the hardware manufacturers have been busy over the last year or so rounding the edges of their tech, putting on velour and wood panelling and packaging them in blister packs for the mums and dads who are starting to digitise their home.

Hey, it'll stabilise eventually, but it may never be the same as it was back in 1999. Burns.





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To further tantalise your uncontrollable addiction for supreme incomparability, if you have more than one machine but not enough space or money for extra equipment, you may want to check these out. Control is easily switched between up to four machines – for USB, PS2, VGA and even audio. They're great too, like a standard KVM – though flash upgradeable. You'll spend at least \$264 on the non-supplied cables for four machines but it's cheaper than three monitors.

3 Sunbeam Laser beam LED

Supplier: PC Case Gear

Website: www.pccasegear.com.au

Phone: (03) 9568 0932 Price: \$19 each; \$28.50 for two.

Ambient lighting is great, but to spruce the blurred mixture of colour in your love box up a bit, grab these focused laser LEDs with a much sharper light. Use this baby to highlight certain areas of your case. Only 5cm long, these laser beam LEDs are powered via standard four-pin Molex, but there's just one line so you can neatly add a few on the outer front and make your machine look like a techno DJ. Just whatever you do, don't look into the light – it hurts.



2 Trust Prismatic glasses

Supplier: PC Case Gear

Website: www.pccasegear.com.au

Phone: (03) 9568 0932 Price: \$27.50

It's a simple, albeit startling-looking device, but it really does save the neck for more useful things. Such as lying down and relaxing in a mode we should all be familiar with: lazing in front of the telly. What these glasses do is redirect the view to 90° downward so you can finally *comfortably* watch the box whilst lying right back and relaxing. Be lazy and look like a master jeweller all at the same time. It even comes with a padded metal case. Light bending goodness.



4 A4tech RF optical mouse RP-680

Supplier: Anyware

Website: www.anyware.com.au

Phone: (07) 3856 3999 Price: \$69

With looks almost identical to that of the MX700, you'd be forgiven for mistaking it, if not for the A4tech logo. The differences are the two horizontal scroll buttons, lighter weight and the mouse's two AA batteries are charged directly in the RF receiver (an extra two are provided). With two RF frequency channels (27.045 and 27.145MHz), the main specs difference is the maximum reach (1 metre). We found its update time was a bit slow but this affordable RF rodent is suitable for the office where frag precision doesn't matter. . .



AVLabs Eye-Spy Wireless colour video/audio camera

Supplier: Anyware
Website: www.anyware.com.au
Phone: (07) 3856 3999 Price: \$175

Who doesn't like spying on their pets and other critters? We all do because it's fun. This baby is a wireless spy cam/microphone kit (composite out) with a practically instant transmission-receipt time at 2.4GHz. You can power it with either the supplied 9V battery (lasted us 40 mins straight) or the wall plug. AVLabs report the maximum transmission distance to be 50 to 100 metres – we maxed out 40 metres with several layers of walls so that's about right. With remarkable picture quality, there's fun for the whole family. . .



Belkin USB 2.0 dockstation with VGA

Supplier: Belkin
Website: www.belkin.com.au
Phone: (02) 4325 4666 Price: \$149.95

If you lug a notebook around and tend to have an ugly mess of cables waiting to be plugged in, you'll understand it being a more tedious job than it should be. A docking station is what you yearn for, and you need only plug in a USB cable with this one. Jack in the USB plug and it adds to your system a 10/100Mb/s Ethernet card, parallel and serial port and two USB 2.0 ports – there's also a passthrough VGA port for us lingering lazies. Use it as a docking station or do it properly and have two of everything.

Gigabyte Wireless travel optical mouse GM-W6C

Supplier: Rectron
Website: www.rectron.com.au
Phone: (03) 9561 6166 Price: \$45

This comfortable mini-mouse is a fresh breath of silicon – it's just 100 percent gold. With the standard two-button scroll mouse layout, it doesn't require drivers – and everything is contained within. Yep, the receiver is a small USB plug that clips neatly in the base when not in use. Performance-wise, it rivals that of the benchmark MX700 – but hell, smaller, lighter and cheaper. The disadvantage is its limiting distance of ~1.5 metres from the receiver. Kudos to Gigabyte for creating yet another brilliant product.



USB 2.0 host link cable

Supplier: PC Case Gear
Website: www.pccasegear.com.au
Phone: (03) 9568 0932 Price: \$29

If you just want a connection direct to another machine with absolute full access rights on the other machine, this will do just that. A good degree of trust would be a requirement for starters. The packaging promises transfers of 15MB/s (yes Megabytes) – in networking terms that's about 117Mb/s. Quite a claim, but it actually peaked at that speed (USB 2.0 link), only sustaining an average transfer of 10.25MB/s or 82Mb/s. However, this kit is *only* for file transfers – that's all. Not bad, but not for the security conscious.





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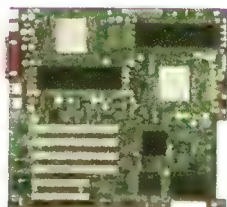
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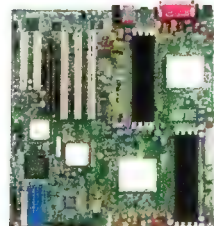
Iwill ZPCjr

Server/Workstation Motherboard



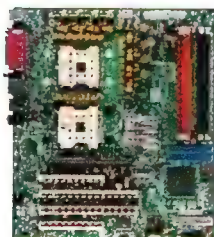
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<http://www.synrax.com>



9 Noise Isolator LAN party bag

Supplier: PC Case Gear

Website: www.pccasegear.com.au

Phone: (03) 9568 0932 Price: \$39.50

This has nothing to do with keeping the noise down. It's a padded deluxe bag for standard/mini ATX cases, chocked with pockets and pouches. This type of bag is what every gravity-respecting LANer should own. It's reasonably priced for a case bag and it's stronger than an ugly garbage bag. Lug around not only your case in this attractive carrier, but your foodstuffs, rodential bits, other HID devices and all the regulars you ship to LANs. This is one strong piece of luggage.



11 Apacer Wireless Steno 128MB

Supplier: Bluechip IT www.bluechipit.com.au

Website: Apacer www.apacer.com

Phone: 1800 803 802 Price: TBA

This is one natty USB flash thingy. As a flash device, it unsurprisingly contains memory – this one in fact holds 128MB. Not particularly exciting, eh? No. Well, like the Gigabyte GN-WLBZ201 back in *Atomic issue* 37, this is also an 802.11b wireless network adaptor. Again, with the drivers held within a fully protected section of the flash memory – so essentially this gadget has two partitions when plugged in. It's black and even has a trippy blue LED light on top – the authoritative reason to grab yourself one.

GEARBOX



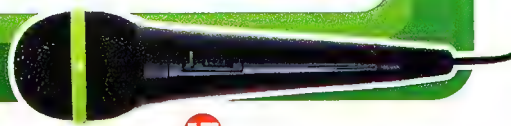
Microsoft Xbox music mixer

Supplier: Microsoft

Website: www.microsoft.com

Phone: 13 20 58 Price: \$99.95

For too long drunken Xbox use has been confined to games, but finally Microsoft has delivered a product that the late night booze consuming public will adore. Xbox music mixer brings the horror of karaoke to your living room, with a microphone, some classic tunes and the ability to strip the voice (with varying levels of success) from your music and sing along. Combined with visualisations, network functions and video mixing, this is a handy addition to any party house.



12 LAN Cable Tester

Supplier: PC Range

Website: www.pcrange.com.au

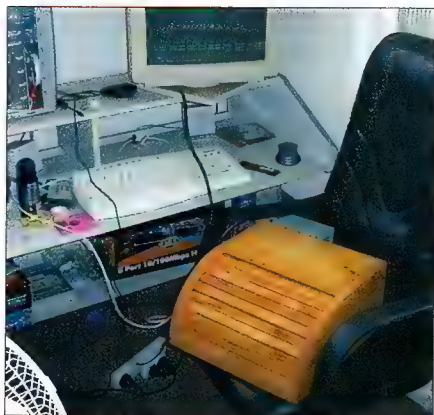
Phone: (08) 8322 9544 Price: \$39

If you consider yourself a bit of a networking aficionado, you really need a good cable tester. Fluke is considered the Rolls Royce of the network diagnostic world, but it is suitably expensive. Not only is this one cheaper, but also, like the more pricey ones, it doesn't require both ends of the cable to be plugged in itself (though it can) – it can internally loop back when the cable is simply plugged into a switch. It's well designed, supports RJ-45/11/12 cabling and it even lets you know when the cable is shielded.





Troy's Breadbox



Breadbox Hotbox.
Weird indeed. Oh well. Being a

modder I had spare parts laying around and after seeing some bizarre cases and case mods, I really started thinking of something I could put these spare parts in.

After numerous ideas and not wanting to sacrifice some of the things I had wanted to make a computer into, I blew the

ideas off. Well last week after reading *Atomic* I was walking around again looking for something to build a computer in and the breadbox I made in year 9 caught my eye. So after that, I attacked it with a hole saw, drill and jigsaw. Thanks to my Mum for the folk art painting on the sides of it and my Dad for lending me his power tools. Power tools MWAAHAHAHA!!!

Disclaimer: Nobody was harmed during the making of this case, except for my thumb (stupid nails).

Technical details

- AMD Athlon XP 1900+
- 256MB PC2100 DDR RAM
- Jetway 867AS-H
- Pine XFX GeForce FX5600
- Two orange LED fans
- 250W PSU
- Round IDE cable
- Breadbox I made in year 9
- 60GB Seagate 7,200RPM
- GlobalWin CPU cooler
- Paint for folk art



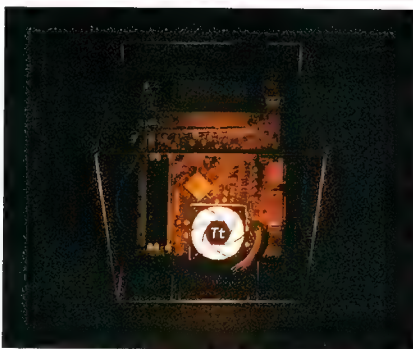
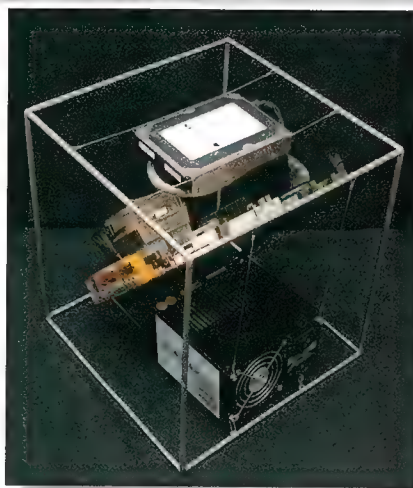
Cleary's eSSentials

After a botched ATX chassis painting afternoon with trop, we decided to start a case from scratch instead. I came up with the cube which I thought was quite original and hadn't seen done before. trop had it made a week or two later, and so it began.

I had to use an onboard graphics card, and at the time the nForce was the only half decent thing I could afford. The PSU has had all extraneous Molex plugs cut off and replaced with two 9-pin stubs for reconnection if need be. I had to get the top of the HDD to sit evenly with the top of the cube, so trop arranged the strips bolted to the side of the drive. Everything is hanging by 8(ish)ply braided picture hanging wire.

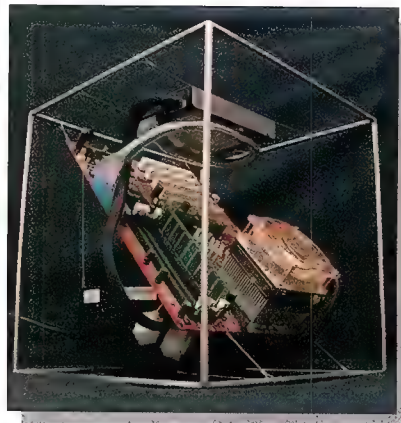
Almost all parts came from the *Atomic* trademart, so it may look a little familiar to Bor_is_a_bear, Vortex, vk2amv, DarkSoul and terrorhertz =)

Big thanks for ideas and support go to trop, grug, xxxceed, Donut_King, Fast&Furious, deathss, Mitt and anyone else who helped. It's my wife Anita's image editing PC now =).



Technical details

- AMD AthlonXP 1700+
- Volcano 9 HSF
- Coolermaster LED fan @ 2,500RPM
- MSI K7N420 Pro (nForce chipset)
- 256MB generic PC2100 DDR RAM
- Onboard GeForce2 MX
- Onboard six-channel nForce sound
- 300mm cube made from stainless rods
- 40GB Seagate 7,200RPM
- Zalman 300W silent PSU
- Bubbles of nothing





MetalZone by David



I did this mod some time ago after being inspired by *Atomic*.

After covering the side panel with masking tape, I started hacking at it with a jigsaw followed by lots of sanding. I decided to drill lots of holes for the top blowhole but upon removing the masking tape, I was shocked to discover that all the holes were out of shape. Determined to change my fate, I cut a square out of the mess.

finish' paintjob could ever achieve.

I decided to make my own grill for the top blowhole using some red perspex. It turned out perfectly after originally cracking the perspex on first attempt. I also put a wire mesh beneath it to make it look cool and to keep dust out. A raised stainless steel floor and a hacked PSU case at the top hide a lot of wires.

Technical details

- AMD Athlon XP 1800+ @ 2000+
- MSI K7T266 Pro2-RU
- 768MB Kingmax PC2700 DDR RAM
- ASUS GeForce 2 MX400
- 40GB Maxtor 7,200RPM
- 20GB Maxtor 5,400RPM
- Creative Sound Blaster Live!
- Creative Digital IR 52x CD-ROM
- Lite-On 12x/10x/32x CD-RW
- D-Link 10/100Mb/s NIC
- Pinnacle PCTV

After all the metalwork on the case was done, I wanted to spraypaint it silver. However, my dad suggested electroplating it. And so we did. The end result was beyond my expectations. The chromed surface surpassed whatever a 'mirror



Web Dreams' WRX Rally



The concept was born whilst discussing the specs of a new PC for one of our clients. He owns a Subaru dealership and in his office was a model WRX. We suggested that we could build one in that and the client warmed to the idea. On closer inspection, we realised that it was too small; it was about 1/16th scale.

We set out to find a bigger case and some stuff to cram into it. We found a 1/8th scale at a model shop, bought some wheels, some paint and started researching small componentry. It started to

evolve. A cut here and there and the shell was ready for the mobo. We cut a hole in the base so the leads didn't hang out the side.

We soldered some LEDs and a small power switch then drilled them into the boot area. Blue for power and red for HDD activity. The hard drive sits on some motherboard spacers to give it some ventilation. We used a round ATA cable, tidied up the leads with some wraps and painted the CD-ROM tray. Once all was in, we added a small blue cold cathode and hit GO. Yeaahhhhhh.

Technical details

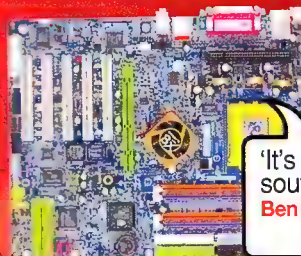
- VIA EPIA-M Mainboard, 17 x 17cm
- VIA C3/EDEN EBGA processor
- 512MB DDR333
- 40GB Seagate hard drive
- 50x CD-ROM
- Built-in audio, LAN and video
- 250W PSU
- 1/8th scale WRX shell
- Round ATA cable
- Fully sik bro' blow-off valve
- Wicked NOS



Hotbox of the month wins the Gigabyte GA-7NXP!

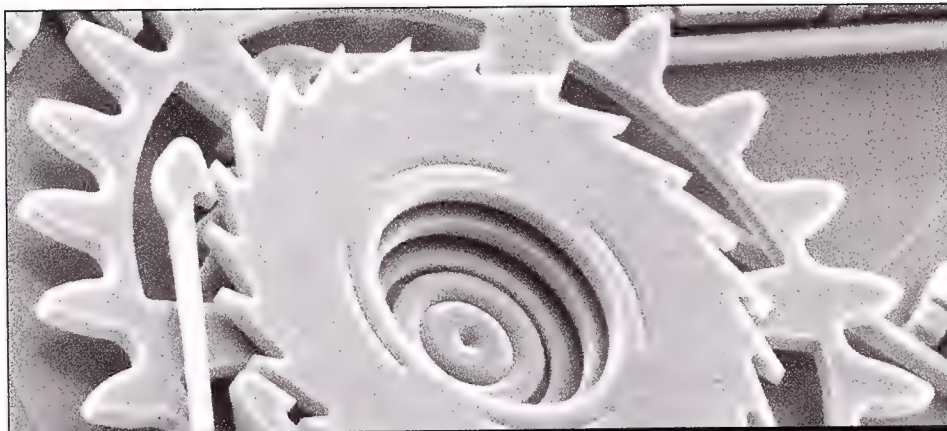
Vote for this month's hottest Hotbox at www.atomicmpc.com.au. Voting closes 21/04/2004. Send your Hotbox pics and 200-word description to hotbox@atomicmpc.com.au.

- NVIDIA nForce2 Ultra400 chipset
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- AGP 8x
- Gigabit LAN + 100Mb/s LAN
- IEEE1394 + 5.1 surround sound



'It's blue like the southern wind.'
Ben Mansill





ABOVE: MEMS at its micro-mechanical best. The picture above is of a tiny, complex ratchet. These types of gears are used in devices like the mirrors in the DSPs of projectors.

to envisage this as an extra layer on a CPU, shifting the heat away from the most heavily taxed regions of the die to much cooler ones. Such a CPU would still need macroscale cooling to dissipate the heat, but the introduction of something like a CPL acts to reduce the overall heat output of the chip by spreading the load around.

Those involved with the study of MEMS see the field as being the next logical step in semiconductor technology. Unlike most of the nanotechnology world, MEMS have been in use for many years and will only keep becoming more and more common in the computing field as engineers move as much functionality as possible onto silicon.

Sounds like flowers

AC '97 is not really a standard anymore, with the numerous hardware and software implementations of the integrated audio codec that have evolved over the years to support increasing numbers of audio channels

and speaker types. However, at heart, the AC '97 sound standard was fine back in 1997, but these days the usage models of PCs are much different.

The rise of the PC as a digital entertainment device means that higher sampling rates, more channels and other sound quality issues are becoming more and more important. To combat this, Intel, developer of the original AC '97 codec, has been working on a new integrated audio standard, which is called Azalia (after the place, not the plant).

At the recent Consumer Electronics Show in Las Vegas, Intel made the obligatory announcement changing the cool codename to lame market-ese, with the technology officially dubbed Intel High Definition Audio (IHDA).

It brings onboard a number of funky technologies designed to simplify use and enhance home entertainment without the need for a discrete sound card.

Amongst the impressive spec list is an auto-sensing jack, designed to detect what type of device has been plugged in without deciphering the counterintuitive audio control panels that Windows inflicts on us. It also has enhanced audio quality over AC '97 with support for 192KHz, 32-bit, multi-channel audio with attachments for speaker setups up to 7.1 channel. On paper this is above the spec of the current benchmark in consumer PC Audio - Creative's Audigy series. There is also an accompanying standard for front panel devices which has the potential to greatly enhance case design.

The standard is designed to work with Microsoft's Unified Audio Architecture concept, which is striving to bring a single driver environment for integrated audio in the form of IHDA, USB and FireWire devices. IHDA should hit the market as part of the ICH6 Southbridge chip that Intel will use to introduce PCI-Express to the market later this year and start appearing more widely late in 2004.



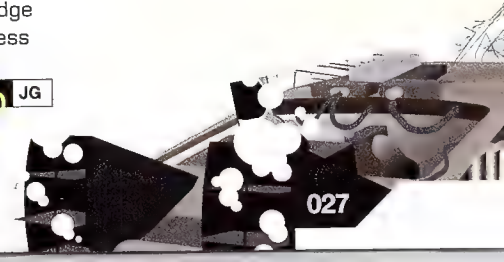
After many hiccups it now seems that the major foundries are getting Low-K dielectrics right. The latest Low-K announcement has come from the Taiwan Semiconductor Manufacturer Company (TSMC), which announced that it had put the second generation of its Low-K dielectric technology into production with ATI's mobility RADEON 9700. This is the first Low-K notebook VPU and follows the debut late last year of the RADEON 9600XT as the first Low-K desktop VPU.

Oxyride is a name that will soon become well known among battery freaks worldwide. Matsushita recently announced new non-rechargeable dry-cell technology, which it touts as the first new technology in dry cell batteries since the advent of the alkaline battery 40 years ago. For high drain devices the Oxyride tech lasts twice as long as alkaline batteries, and for low drain devices like MP3 players it offers 1.5 times the performance. AA size Oxyride batteries are due to go onsale in Japan in April.



Micron has become the first memory firm to submit 1GB DDR-2 chips for validation ahead of the launch of support for this memory type later this year. DDR-2 brings onboard higher speeds and bandwidth, but its main advantage is in shoring up the performance of memory modules with 1GB and above capacity. The first DDR-2 chipsets are set to be Intel's Grantsdale and Turmwater.

Internal interconnect technology has received a boost, with the HyperTransport consortium announcing the second version of the specification. HyperTransport 2.0 will increase bandwidth from 12.8GB/s to 22.4GB/s and add support for interoperability with PCI-Express. The consortium expects products to appear in the market as early as the end of 2004.





Prescott straining the silicon

P4 v3.0 @90nm. She's a right munter, claims James Wang.

or every beginning, there's an end', once said the great Oracle. The Pentium 4 Northwood blitzkrieged the CPU scene at unstoppable speed: starting at cool 2GHz, it broke through the 3GHz mark in less than a year. Even for such an amazing chip, the end of its life is near. But fear not, the new beginning is already here: meet Prescott, the third major revision to the Pentium 4 processor.

The ingredients of Moore

It's easy to speak of Moore's law as a magic wand driving CPUs faster but what drives Moore's law? We'll now look at why exactly Prescott runs faster and in turn see the real driving forces of processor development.

For a start, the transistor in Prescott is 17 percent smaller than the one used in Northwood. At only 50 nanometres (50nm) wide, it's faster, cooler and uses less space. It uses a new oxidizing layer made of nickel silicide and one additional layer in the interconnects to shield against voltage leak. To make gates this small, you need very fine carving tools, or in the case of CPU production – lithography. Northwood wafers are etched using 248nm ultra-violet light. With the help of tiny lenses and masks, it can etch circuit patterns in the

130nm range. To move to 90nm however requires not only higher frequency UV but more accurate photomasks which serve as a stencil to the etching process. Even using 193nm UV, this proves extremely difficult. Prescott's etching is done indirectly, exploiting the fringing effect when light enters a medium with a higher refractive index. The fringes of light caused by interference are much finer than the original beam and with the help of superfine photomasks allow Intel's wizards to paint circuits as narrow as 90nm.

The material used to make the semiconductors, the 'recipe' so to speak has also changed in Prescott. First introduced by IBM, strained silicon is exactly as the name suggests – silicon that is under strain. When the structure of the silicon lattice is stretched, the atoms fall out of regular alignment and the electrons that carry signals flow through the gaps much faster than when the silicon is tight. Production costs of strained silicon are now low enough (only 2 percent more expensive than unstrained) for mainstream application and Prescott is Intel's first processor to use this process.

So the gates are smaller, the lasers cut finer and the silicon under strain works harder – how does one use the new die space? This is the most interesting part where different tradeoffs with the transistor budget will yield totally different performance profiles. Prescott focused on two areas, additional cache and a longer pipeline.

RIGHT:

SYSmark2004 benchmarks comparing the Pentium 4's Northwood core against the Prescott. As you can see, the additional 11 stages have slowed the Prescott down, but will allow for larger ramp-ups in clockspeed.

Northwood

SYSmark® 2004 Rating	185
Internet Content Creation Overall	211
Internet Content Creation 3D Creation	202
Internet Content Creation 2D Creation	252
Internet Content Creation Web Publication	185

Prescott

SYSmark® 2004 Rating	176
Internet Content Creation Overall	204
Internet Content Creation 3D Creation	196
Internet Content Creation 2D Creation	247
Internet Content Creation Web Publication	176

Inside Prescott

When the first Pentium 4 was launched, its internal pipeline was at a staggering 20 stages. This long pipeline strategy paid off eventually with speed scaling beyond 3GHz, leaving AMD's chips in the dust frequency wise. Following the family tradition, Prescott extends the pipeline further; to a total of 31 stages (in contrast, the Athlon 64 has 12 stages). What this means is that for every clock that propagates down the pipeline, up to 31 units of work can be fulfilled. What this also means is, if the pipeline isn't properly fed with data at each stage, processing power can be wasted. Herein lies the problem, how to keep a 3.2GHz monster with a 31 stage digestive tract fed. Unsurprisingly, Intel goes back to the same old tricks.

Cache is one of the easiest and most effective ways to improve microprocessor performance. Evident in the Pentium 4 Extreme Edition, increasing cache size does wonders for performance. Prescott doubles the cache on Northwood on all levels; L1 data cache is now at 16KB and L2 upped to 1MB. Cache however only gives you faster access to data; it doesn't guarantee the pipeline will be fed optimally. This data 'packaging' problem is where architectural enhancements come in.

The job of the CPU's front end is to decode instructions and pack them, along with any needed data, as efficiently as possible for the pipeline to process. Dependent operations such as branches are major hazards to long pipelines which can not afford to use one



cycle (31 stages) to evaluate the first expression in order to carry out the next. The front end's branch predictor – designed to 'guess' which path a piece of code is likely to take – is now optimised for backward and forward branches commonly found in loops. Dynamic prediction has also been beefed up, borrowing the 'indirect branch predictor' which first appeared in the Pentium M from Intel's Israel design team. A few other micro-architectural enhancements have also been added: a dedicated multiplier in the arithmetic logic unit (previously multiplication was done on the floating point unit), 13 new SSE3 instructions and frequency distribution has been enhanced to provide better quality clock signals to all parts of the chip.

One particular SSE3 enhancement worth discussing is an optimisation for 3D graphics. 3D graphics data are vectorial in nature. That is to say, they come in data structures of three or four scalars. Three scalars naturally depict the position of a vertex in 3D space or the RGB components of colour. More common however is to use four component vectors, known as vect4s. The last component can be used to store the perspective value 'w' for a vertex or the transparency (alpha) value in RGBA colour. Normally, CPUs are optimised at SIMD operations involving executing a single instruction on all vector components. While this is useful in video and audio streaming where all the data is processed in a similar fashion, 3D operations call for unique operations on the four components of the vector. In such cases, a CPU's SIMD feature becomes useless and goes back into operating with single instruction and single data. The Prescott's SSE3 extensions allow the CPU to rearrange vector data to SIMD format. For streaming vect4 data, instead of reading a streams of [x,y,z,w] vectors in sequence, it reads in all the x, then all the y and so on until it has packed the identical components in the same row. This way it can perform a single instruction on all 'x' values at once, increasing throughput by four.

Performance

When it comes to simulating real usage environments, SYSmark2004 is hard to beat. Most benchmarks concentrate on doing a single particular task but SYSmark simulates multiple intensive applications running simultaneously. This methodology particularly suits testing the Pentium 4 for its multi-threading capabilities. Of the eight tests, the 3.2GHz Prescott soundly beats the equivalently clocked Northwood in all but one of the categories. This isn't too surprising – the SYSmark tests run multiple applications with fairly random memory access patterns. Although the Northwood tends to be faster at executing a single, calculation-intensive test, the memory thrashing of multiple applications give the Prescott's bigger cache a notable advantage. The improved HyperThreading in Prescott may also have helped in utilising idle parts of the pipeline.

Looking at 3DMark2003, the picture changes; Northwood consistently leads the Prescott in

Config	MHz	Audio (KB/s)	DivX (FPS)	Q3	MT
Prescott					
14x200	2800	2134.5	61.8	200.5	3.9 52.1 33.4 12.9
14x225	3150	2394.8	69.5	225.2	4.5 58.6 37.8 14.7
14x250	3500	2658.4	77.3	250.9	5.1 64.8 41.9 16.4
Northwood					
14x200	2800	2480.1	54.793	202.0	4.8 45.6 33.4 12.8
14x225	3150	3769.6	61.6	228.1	5.4 51.4 37.4 14.3
14x250	3500	3096.6	68.3	251.8	6.2 56.5 41.7 15.7

* CoreCentre produced unpredictable results

* FSB locked at 200 min and multiplier at 14x min.

* All benchmarks were run in set sequence to maintain maximum cache consistency

* Intel default mobo was useless, used MSI-6728 / 512MB

ABOVE: MP3, DivX, Quake 3 and multithreading results for the Northwood and Prescott cores.

performance, although only by a small margin. Media encoding had mixed results; the Prescott raced through DivX encoding but lagged behind in audio encoding. The ever reliable Quake 3 returned negligible difference between the two chips. Prescott's multi-threading didn't impress either, returning mixed results against the Northwood. All in all, Prescott is mostly a tad slower in single application environments and kicks in high gear when multiple applications are used.

Looking ahead

Intel has a sadistic tendency to change sockets and Prescott will soon be on that list. The current batch of Prescott will use the familiar 478-pin mPGA package but soon a new socket standard will take its place: LGA-775. The Land Grid Array package shares much the same characteristics of the beloved BGA memory package, namely using balls as contact in place of pins. Intel's strategy is to use this



package as a form of thermo conductor, leading heat away from the CPU, using the motherboard as a heatsink. Although it presents itself as an attractive idea, one would need to stretch their imagination as to how 'balls' designed to carry signals can conduct heat better than pins, and how the heat can be dissipated through the thermally inept socket and the already warm motherboard.

Prescott, like its predecessors, suffers the slow starter syndrome – the initial launch performance is sub-par. As it stands, we think there's no compelling reason to buy a Prescott CPU over Northwood; it runs hotter, performance is often slower and motherboard firmware support is sketchy. The real Prescott is still a while away. LGA-775 will not only power a new Prescott, but also its successor: 'Tejas'. Although information is sketchy, Tejas will likely be Intel's x86-64 solution. There are already some clues that 64-bit extensions may be present in Prescott, much like the basic support for HyperThreading has existed since the Willamette, but most likely they won't be activated. The steeper performance gradient of Prescott will at some stage, allow it overpower an equivalently clocked Northwood. But until then, hold on to what you have and enjoy the show.





head to head



3D illustration by Tim McPherson

Science meets nanofiction

The nanotech of today confronts its doppelgänger in the world of make-believe. What's in store for humanity if molecular assembly becomes reality? With shirt a-spinning, Logan Booker takes on the nanoswarm.

As the epic turnstile of history shows with frightening consistency, mankind, for many hundreds of years, pursued science with the mentality of 'bigger is better' over the slightly less simplistic 'smaller is sexier.' This train of thought persisted, with great cost, up until the 1950s.

Evidence of this mentality can be found in the unfortunate past of the world's greatest ocean-going vessels. The sinking of the Titanic in 1912, a ship heralded as unsinkable due to its honeycomb hull construction and large size; the overestimation of the German pocket battleship Scharnhorst's abilities and its destruction in 1943; and finally the demise of the 63,500-tonne Japanese battleship Yamato – easily the world's largest sea-bound warship – by overwhelming US forces during its suicide run to Okinawa in 1945.

While circumstance is arguably more at fault than the actual nature of the ships, they nonetheless present a strong argument for humanity's poor track record when it comes to objects of immense size.

Coincidentally, it was in 1959, not long after World War II, that Richard Feynman, then a Professor of Theoretical Physics at the California Institute of Technology, gave his now prophetic talk, *There's Plenty of Room at the Bottom*. In it, he posed the question: 'Why cannot we write the entire 24 volumes of the Encyclopedia Britannica on the head of a pin?' While we won't dwell on Feynman's speech – in today's world of nanoscale devices it's of little consequence – this question spurred research into a new field of science, a field that remained nameless until the publication of Eric Drexler's *Engines of Creation: The Coming Era of Nanotechnology*.

Real versus Cyberpunk

Nanotechnology is a very real science. The term itself suffers terribly from being over-hyped, intrinsically vague and used incorrectly, but these are problems we will tackle later in this article.

The roots of the current, unrealistic perception of nanotech in popular culture can be traced back to literature, TV and movies (as is the case with most of society's unrealistic perceptions of science), including Michael Crichton's novel *Prey*, published in 2002, and the less recent *Diamond Age* by Neal Stephenson in 1995. Series such as *Star Trek* liberally coat most of their technological references with mentions of nanotech, and even more down-to-earth sci-fi shows such as *Stargate SG-1* include the odd reference to nanobots and devices.

Sci-fi magazines, as well as both pen-and-paper and video games, contain the most prolific references;

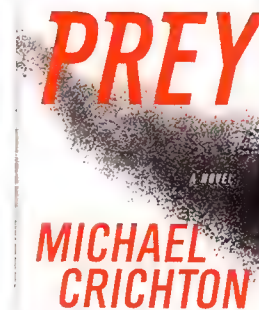
nanotechnology is a strong narrative device, as well as a play mechanic, be it in the form of life-saving miniaturisation in Isaac Asimov's 1989 *Too Bad!*, where MIK-27, or 'Michael' the robot is shrunk to nanoscopic sizes to remove cancerous cells from the body of its creator, or the reflex-boosting 'Enhanced Oligodendrocytes' upgrade for full-borg conversions in *Cyberpunk: 2020*. Nanotechnology, while not given much fanfare in real-life (at least in mainstream media), receives its fair share of recognition in the land of fiction. The main reason for this: with enough modification of concept, nanotech can solve almost any problem, in any form. On the flipside, it can also be a storyteller's source for the world's worst disasters.

Considering it receives little representation outside the realms of make-believe, society has some far-out beliefs of what nanotech can and cannot achieve.

Nanotech, but not as we know it

'The breadth of nanotechnology is almost as great as that of science itself,' says Dr Simon Brown, a senior lecturer at Christchurch's University of Canterbury, in his article *Technology's New Frontier*.

Currently, Dr Brown leads a nanotechnology research team at the university. His team is pioneering a new technique of arranging nanowires on semiconductors, called cluster nanotechnology. Instead of manipulating individual molecules or atoms, clusters of molecules are made to arrange themselves.



ABOVE: *Prey* has been a source of major discomfort for many a nanoscientist.



Brown describes this new method as a 'physicist's approach' to nanotechnology; he doesn't consider it 'molecular nanotechnology' (MNT), which is yet another term used to describe yet another type of nanotechnology. 'Molecular nanotechnology is a good example of what you might call "mainstream" nanotechnology.'

MNT is what is usually meant by the term 'nanotechnology' in science fiction: the forced

... humanity has a poor track record when it comes to objects of immense size.

arrangement of atoms and molecules to create materials and devices. The novel *Diamond Age* features 'molecular compilers' that take raw molecules and atoms from a central 'feed', which is simply a feedstock of base materials filtered from mundane things such as human waste and chemical byproducts – basically anything unwanted that's contained within the Earth's biosphere.

The nanomanufacturing facility featured in Crichton's *Prey* uses 'biological assemblers' that – apparently – defy science. Chris Phoenix, the co-founder of the US-based Center for Responsible Nanotechnology (CRN), tears the book apart in a more general sense in his critical analysis *Don't let Crichton's Prey scare you – the science isn't real*. 'Prey contains ... exaggerations and mistakes in science. A scanning probe microscope and an electron microscope are basic tools of nanotechnology ... yet Crichton confuses the two.' Phoenix however doesn't entirely dispose of Crichton's sci-fi answer to MNT. We are also still left with the question of what nanotechnology really is.

According to Brown: 'What most people really mean when they talk about nanotechnology is some

sort of capability to build, address, pass current through, [or] make useful some sort of object smaller than 100 nanometres.

'In some sense I feel that we should be talking about trying to find new words for these technologies and move away from the label of nanotechnology – I feel increasingly that it's an unhelpful label.'

This is a statement easily justified by looking at the range of breakthroughs in 'nanotechnology' over the past 12 months. In January of this year, a team at the Indiana University in Bloomington, US, used gold nanoparticles to examine the inner-workings of living cells; while a US-company called BioForce Nanosciences used a device called a 'nano-arrayer' to speed up the testing of blood samples in viruses. These are examples of what could be termed 'bio-nanotechnology'.

The different applications of nanotech do not end there. In November last year, the Technion-Israel Institute of Technology developed a way of self-assembling nanodevices using biological methods. October saw Oxonica, a

firm based in Britain, develop a fuel additive using nanoparticles that runs cleaner and more efficiently. As can be easily seen, nanotechnology is not really a 'field' – it's a much more generic term – which has the unfortunate side effect of making it hard to nail down.

As for the bio-assemblers in Crichton's *Prey*, Phoenix provides us with this in his article's conclusion: 'Readers of *Prey* should remember that it [the book] does not provide a realistic portrayal of the technology. Many parts are impossible, and many others are stretched beyond plausibility.'

We will come back to this below in 'The case against – grey goo'.

Fiction's machinations

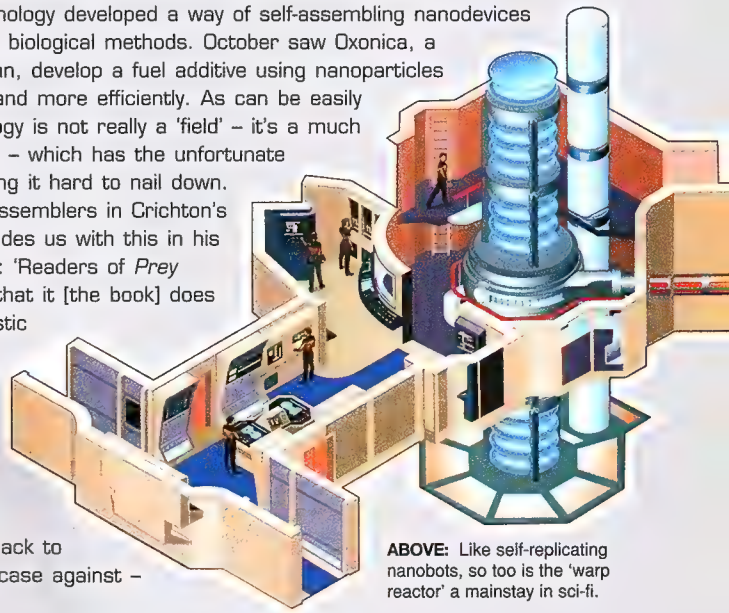
Approaching nanotechnology as it is represented in science fiction from the eyes of science is a troublesome proposition at best. 'I see it [nanotechnology in sci-fi] as science fiction quite frankly – it's speculative, it's a work of fiction, it's creative thinking,' says Brown.

'Take *Star Trek* as an example – the whole concept is based on a warp drive, which we don't have a clue how we'd make... If you want to be cynical, you could just [dismiss] the whole thing [as] artificial and out of reality – but that's not what it's about, it's just entertainment.

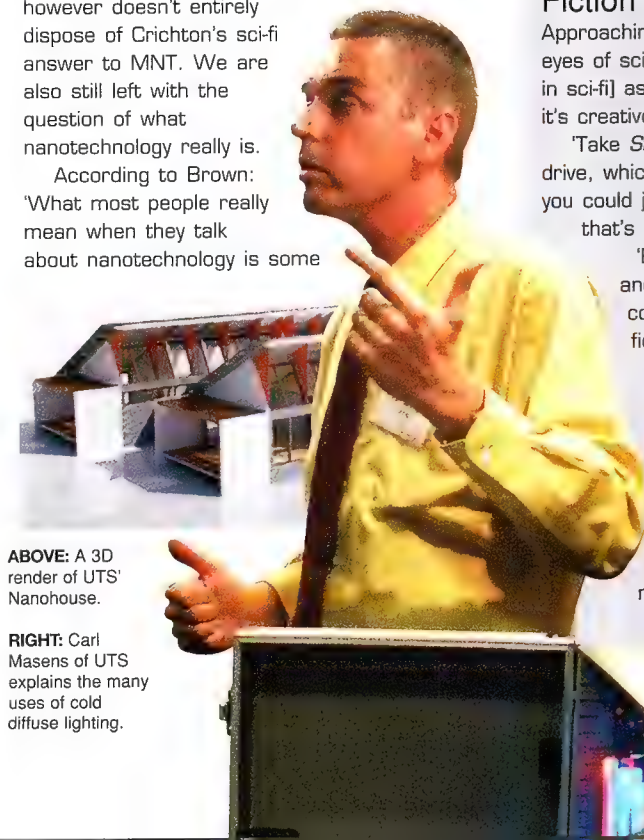
'But it gets to be a problem when people start taking these scenarios and seeing them as potential realities and claiming that dramatic consequences or dramatic action should be taken because of these fictional things.'

To take nanotechnology completely out of the realm of reality there is little need to look far. The novel *Mission Gamma: This Gray Spirit*, by Heather Jarman, pits the crew of *Star Trek: Deep Space Nine's* Defiant against a web of destructive nanobots – nanobots capable of shifting in-and-out of 'subspace' – *Star Trek's* answer to the logistical problems of travelling vast distances in space. Subspace also has the advantage of hiding the presence of objects from those in 'normal' space. The particular nanobots featured in the novel have the capability of draining energy from warp reactors and disassembling ship systems. Science fiction places no limits on the flexibility of nanotechnology.

'If you consider self-replicating nanorobots to be the warp drive, then they are to nanotechnology what warp drive is to mechanics,' says Brown.



ABOVE: Like self-replicating nanobots, so too is the 'warp reactor' a mainstay in sci-fi.



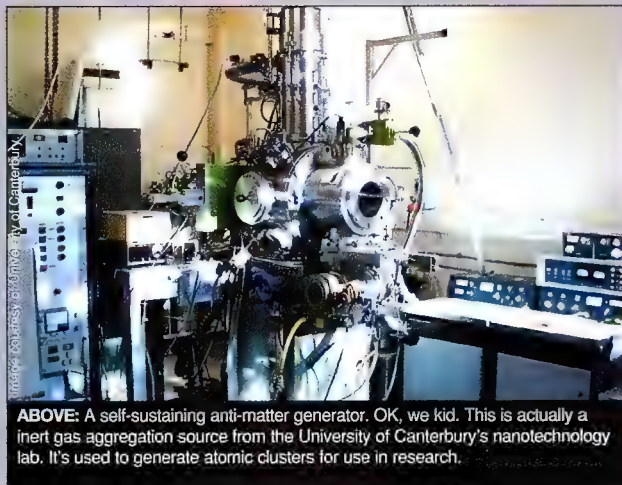
ABOVE: A 3D render of UTS Nanohouse.

RIGHT: Carl Masens of UTS explains the many uses of cold diffuse lighting.



'My view is that nanotechnology is going to be pervasive, but kind of invisible – in the sense that it's an enabling technology... it doesn't create totally new devices in general,' Brown says.

Common sense dictates that a direct



ABOVE: A self-sustaining anti-matter generator. OK, we kid. This is actually a inert gas aggregation source from the University of Canterbury's nanotechnology lab. It's used to generate atomic clusters for use in research.

comparison between real nanotech and sci-fi nanotech is impossible. There's no baseline to work from, there's conflicting terminology, and made-up science has the uncanny ability to have nothing to do with real science.

What we can do instead is examine nanotechnology as it stands today, and then rebut the ideas presented in science fiction – that people may assume to be true – with this information.

The case for – do more for less

According to Richard Smalley, Professor of Chemistry and physics at Rice University in Texas, US, the main reason nanotechnology is pursued in science today is because it is seen as the answer to the world's energy crisis. Smalley is also recognised as the discoverer, along with Harold Kroto, of fullerenes or 'buckyballs', which are known more scientifically as molecules of carbon-60, or C-60. This discovery was a significant breakthrough for nanotechnology research.

The problem of energy could be solved through the use of MNT. The ability to create almost any material from scratch, instead of using traditional manufacturing techniques such as chemistry or alloy bonding, would negate the need for heavy industrial machines, as well as the base resources to feed them.

If we admit the molecular nanotechnology as it is presented in science fiction is beyond the realms of current technology, then a look at the current, practical uses for the nanotech must be examined.

In Australia, CSIRO (the Commonwealth Scientific and Industrial Research Organisation) in collaboration with the University of Technology, Sydney (UTS) is working on a project known as Nanohouse. Nanohouse makes use of more 'mundane' types of nanotechnology – mainly nanoparticles – for use in glass that reflects heat and UV but lets in light; paints that reflect or absorb heat and cold; semi-transparent solar panels; and windows that clean themselves through a combination of a titanium dioxide coating and UV light.

These are all real technologies.

'We announced the Nanohouse initiative in September 2002, when UTS and CSIRO signed a letter of intent establishing the core partners... Technology limitations were not a concern [in regards] to deciding [where] to start, since we already knew of enough examples of appropriate technologies, eg: IR and UV blocking coatings for windows ... [and] self cleaning surfaces,' says Carl Masens, project manager for the Nanohouse Initiative at the UTS Institute for Nanoscale Technology.

There are several technologies that we have already incorporated into the designs for the Nanohouse system. I refer to it as a system because ... [we are] not working on one building design, but a new way of building.'

The self cleaning windows used in Nanohouse are a good example of the combination of current technology and nanotechnology. 'Titanium dioxide undergoes a redox (transference of electrons between chemical species) reaction in the presence of organic material ... and UV light, causing the dirt to fall apart,' says Masens.

This use of nanoparticles to 'enhance' materials and devices currently available is the real side of today's nanotech. However, a large percentage of nanotechnology research does lie in more modern semiconductor research; many in the field see it as the continuation of miniaturisation.

'A semiconductor in itself isn't [anything special],' says University of Canterbury's Brown. 'You've got to incorporate it into a device of some sort... it goes back to this thing where nanotechnology is the enabler – by using these small particles in the device... you get a different type of device to the one you would have got if you'd just made it out of a big lump of the same metal. That's what nanotechnology is about really: harnessing the new properties that you get in very small materials or objects.'

The case against – grey goo

An article on nanotechnology would not be complete without a reference to 'grey goo' – the worst case scenario of nanotech gone wrong. It also happens to be the only major sci-fi spin on nanotechnology that requires serious rebuttal, if only to dismiss the disturbing ideas that may have permeated into reality. It's described succinctly by www.wikipedia.com: 'Grey goo refers, usually in a science fictional context, to a hypothetical human extinction event involving nanotechnology, in which out-of-control self-replicating robots (Von Neumann machines) consume the Earth while building more of themselves.' There's even different types of 'goo' to signify its source – red goo for usage by terrorists, for example.

'Most Drexlerian claims about diamondoid [the raw material that forms the basis for MNT] are hard to validate, and the idea of building macroscopic things from atoms is simply impossible today,' says Paul Mulvaney, an Associate Professor at the University of Melbourne.

'Molecularly assembled goods... are probably not the way to go, and indeed most Drexlerian stuff... is not worth discussing in practical terms. But it serves to stimulate ideas – if we are to get to the stage where MM [molecular manufacturing] is viable, we have got to realise it will need to operate on several length and time scales.

'You can make simple molecules like amino acids in dilute soup – the basic manufacturing is just normal chemistry. But the next steps of assembling low probability chains and ordered, higher level, functional structures becomes even more unlikely using current chemistry,' says Mulvaney.



'You need to drive this by templates or other micromachines, a bit like PCR [polymerase chain reaction] reactors... In other words, you bootstrap. But chemistry is the bottom level – we don't have meso or nanoscale structure builders, which will enable us to go to the next step.'

A further issue is nanoenergy. Mulvaney says '...we need to begin looking more seriously at nanomechanics and energy conservation in nanoscale systems. If we don't understand lubrication and how to make and apply energy – ie: get mechanical work from chemical energy – we won't have much need for micromachines.'

The nanoswarm in Crichton's *Prey* is a perfect example of the grey goo theory. The nanobots in *Prey* harvest their raw materials from their dead victims. According to one critical analysis of the book, organic bodies such as humans and animals do not contain the required amounts of gallium or silicon to produce a semiconductor. Additionally, Crichton never gets around to solving a problem he himself introduces – the inability of his nanobots to navigate in strong winds. Such a problem would be a very real hurdle in developing nano-sized flying robots.

Like Crichton's nanoswarm at the mercy of *e-coli* phage, the theory of self-assembling nanobots falls apart at the hands of science, as does that of grey goo.

Do nanobots dream of electric sheep?

In the end it's about education. There's no real problem with science fiction – it's about the story after all. The dilemma is the gap that's forming between public



Blade Runner: Science fiction can't help but shape our perceptions of the future. *Blade Runner*, for instance, released back in 1982, gave us visions of hovercars and replicants. And it's still relevant

awareness of nanotech and the reality of the technology. Dr Brown of the University of Canterbury put the situation in perspective best during a recent interview:

'There's definitely a potential for people to get very wound up about nanotechnology because of the hype generated by Michael Crichton [and others]... I really think it's important that scientists get involved in the debate early on and try to demystify what nanotechnology is all about... just because someone's written a novel about the world being turned into grey goo by nanobots isn't a good reason to get anxious about nanotechnology.'

'I don't see people working on self-replicating nanobots... this is the sort of thing the science fiction people like to talk about... I don't see it happening for a long time. It's difficult to say it won't happen for 10 or 15 or 50 years...' says Brown.

'But it's not something immediate – or even around the corner.'

References

CSIRO Online, *Nanohouse brings nanotechnology home*
www.csiro.au/index.asp?type=mediaRelease&id=Pmanohouse

Phoenix, C. 'Don't let Crichton's *Prey* scare you – the science isn't real', *Nanotechnology Now*
<http://nanotech-now.com/Chris-Phoenix/prey-critique.htm>

Phoenix, C. *Of Chemistry, Nanobots and Policy*, Center for Responsible Nanotechnology
<http://crnano.org/Debate.htm>

NewScientist.com, *Nanotech spy eyes life inside the cell*
www.newscientist.com/news/print.jsp?id=ns99994615

NewScientist.com, *Chip promises faster multiple virus test*
www.newscientist.com/news/print.jsp?id=ns99994590

NewScientist.com, *Nano-transistor self-assembles using biology*
www.newscientist.com/news/print.jsp?id=ns99994406

NewScientist.com, *Nano fuel additive enters efficiency trials*
www.newscientist.com/news/print.jsp?id=ns99994615

Baum, R., *Drexler and Smalley make the case for and against 'molecular assemblers'*, *Chemical and Engineering News*
<http://pubs.acs.org/cen/coverstory/8148/8148counterpoint.html>

Brown, Dr Simon. *Technology's New Frontier*. The Press, February 2004.

special thanks

Thanks to Dr Simon Brown, Professor Paul Mulvaney and Carl Masens for taking the time to answer our questions on nanotechnology. Their replies and assistance were greatly appreciated.



On the fringe: 'distributed intelligence'

Crichton's *Prey* isn't entirely devoted to the nature of nanotech – it also covers (somewhat vaguely) distributed intelligence – the science of controlling a large number of

identical entities known as 'agents'. The Borg in *Star Trek* are a good example of what distributed intelligence is capable of... in a sci-fi setting at least.

Coincidentally, when a Borg 'infects' a member of another race, it uses probes to inject its victim with self-replicating nanobots, which then manufacture cybernetic components in the host's body.

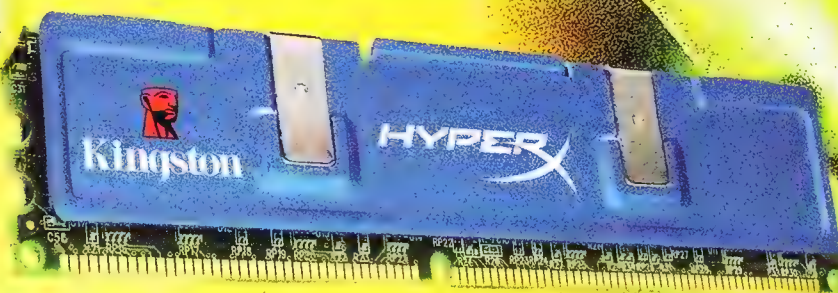
It's held that if we *could* make self-replicating nanobots, a single agent alone would be incapable of any major task, such as destroying cancer cells or devouring organic beings.

By tackling tasks *en masse* and sharing resources such as processing power, memory and physical tools, nanobots would be able to do many, many things. In order to do this, they would need complex programming to control their behaviour.

In *Prey*, the nanobots are governed by rulesets, or hierarchical finite state machines (FSMs). FSMs are also known as Turing machines (named after the venerable Alan Turing).

FSMs work by flowing top-down; they start with a problem and then pose certain questions to that problem. The answers to those questions eventually result in an action. This approach is also used in AI for games, the major customers being first person shooters and realtime strategies.

While the FSMs in games are fairly limited, Crichton's nanoswarm worked by expanding its base set of rulesets through action. As each new 'generation' of nanobots was created, these enhanced rulesets would be passed on. The speed and efficiency at which the nanobots learned was incredibly unrealistic – even today's most advanced robots have trouble navigating around rooms and distinguishing objects, let alone breaching rulesets to develop new behaviour.



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The new multimedia

As the hardware industry focuses its gaze upon the living room, John Gillooly looks at what you need to build a digital media network of your own.

multimedia as a concept has come a long way from the days when it was purely an excuse to sell exorbitantly priced sound card and CD-ROM bundles. Processing power is at a point that means even low-end PC systems are capable of playing audio and video with little effort and the explosion in file sharing over the past few years has inflated people's hard drives with legally downloaded content.

There has been a digital media revolution of sorts occurring in the US over the past few years but very little product has trickled into the Australian market.

A lot of this effort was spearheaded by the almighty TIVO PVR (Personal Video Recorder), which opened up a market that big IT players like Microsoft, Intel, NVIDIA, AMD and ATI are all trying to wedge themselves into.

2004 is all about convergence for the IT industry, and this convergence is set to happen in the home. Millions of dollars are being used to grease this convergence, and the ultimate endpoint is a world where the once disparate consumer electronics industry and the IT industry are all happily holding hands and dancing with glee.

Spearheading this is a superset of Windows XP called Media Center Edition. This is an OEM only version of XP that has strict hardware requirements like the inclusion of a remote control and TV tuner. What it delivers is a simplified interface designed for navigation with the remote control and a host of digital media functionality like the inclusion of PVR software.

It all sounds fantastic, but yet again it looks like us Aussies are getting screwed in the deal. While Microsoft has now released two editions of its media centre version of Windows XP, we are yet to see



anything down under. From our conversations with some of the key players involved in the Media Center late last year it looked like we may have been slated for inclusion in this year's releases, but this is now looking less likely.

Digital media networks

This leaves us in a situation where we users have the power, the know-how and the bloated hard drives full of media, but no out of the box solution to tie everything together. But fear not, just because Microsoft doesn't feel like launching its software here doesn't mean we are completely shafted. Building your own digital media network can be as

difficult as you want it to be. It will only take a few network shares to be able to view movies and music stored on another PC, but to make things user friendly it takes a few tips and tricks.

There are several routes you can take to build up such a network, but at essence it comes down to what sort of client will eventually plug into your home entertainment system. Over the next pages we will go through the various options available at the moment, but the first step is to set up the system that will serve the media files to the client. This will ideally be a dedicated home media server, but it can be served off any PC as long as you understand the limitations.

If you use your PC to serve files then you need to be aware of the potential for cries of anger when you reboot half way through someone's video watching, or fire up a particularly resource hungry game, reducing the video stream to a blocky chugfest. A dedicated server, on the other hand, need do nothing more than exist on the network and serve files without interruption.





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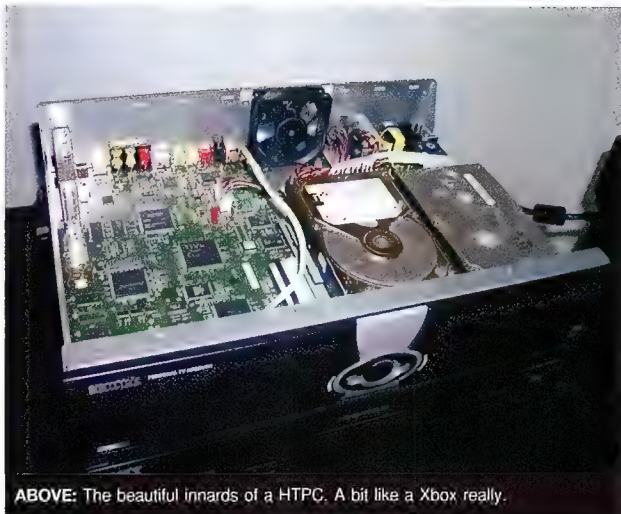
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ABOVE: The beautiful innards of a HTPC. A bit like a Xbox really.

A media server doesn't have to be a grunty machine, all it really needs is lots of storage and a fast Ethernet connection. CPU speed only needs to be in the range of 700-odd MHz for a smooth running box. As for hard disks, you could consider running RAID, but in reality, effort is best spent getting as much storage into the server as possible, rather than aiming for speed boosts that will be unnoticeable in everyday use.

The next decision is what sort of network to deploy. While Wi-Fi is getting better all the time, it has too many drawbacks to be used as the main means of communication between your media server and your client. Even though 802.11g delivers 54Mb/s bandwidth (or 108Mb/s in the new turbocharged models from some companies), this is barely sufficient to deliver a video stream, and once you add some thick walls or a microwave oven to the household mix, the signal strength drops off. Even the simple addition of 802.11b clients to an 802.11g network will slow it down drastically as the network drops to 802.11b speeds.

What you really want is a Gigabit Ethernet network, even though a standard 10/100 Ethernet network will be sufficient. We cannot stress how important it is to run a wire-based network between the client and server at least. You can then tack a wireless access point onto the living room end in order to connect other devices if you need to.

If you are going to go for Gigabit then look for a motherboard that uses Intel's 865 or 875 chipsets and has an onboard GbE chip. In these chipsets the GbE controller

has been moved off the crowded PCI bus and given a line straight to the Southbridge via a technology called CSA (Communications Streaming Architecture), effectively doubling the 900Mb maximum speed of GbE when attached to the PCI bus. These higher speeds will become more widespread once PCI-Express x1 connectors for GbE start appearing on motherboards midway through this year.



Digital media adaptors

Once the server and wiring are sorted the next priority is finding something to sit between the network and your home entertainment system. Most of the time this will be a PC that has been tailored for the task, but there are other all-in-one solutions that are worth looking into, products known as digital media adaptors (DMAs).

While they are still incredibly hard to find in any form, there are two major types of DMA. The first kind, which are predominantly made by Wi-Fi specialist companies, are currently only capable of streaming audio and still images around the home, thanks to the fluctuating bandwidth of Wi-Fi. In the other category are products designed to connect via Ethernet, enabling them to stream video as well as music and images.

One of the most comprehensive products in this category is the Play@TV, made by a Korean company called iCube (www.icube.co.kr). While the product is still to make it into the Australian retail chain, it is perhaps the best example of how digital media adaptors are supposed to work.

Building an HTPC

A more powerful solution comes with the customisability inherent in the PC. A home theatre PC (HTPC) need not be anything too powerful, it's very much a case of tailoring the hardware to the task, and that task is not running the latest games. What you want from a home theatre box is reasonable CPU power, some kind of MPEG decoding support and a healthy dose of RAM. The only thing really task-dependant is the drives you use. If you want to just stream media off the network all you'll need is enough hard disk space for the OS and software needed for media playback. If you want to turn the box into a Personal Video Recorder (PVR), then chunky hard drives are a necessity.

As for optical drives, a DVD-ROM drive is probably the best choice between price and needs, but a DVD burner is overkill and probably better installed in one of the other network boxes. Optical drives can be a major source of noise inside a PC, so have a think about whether or not you need an optical drive once the operating system is installed.

The options are really limitless on what kind of box you build. The actual form factor ends up being a choice of aesthetics and audio levels. Think of the environment in which the HTPC will sit, and how accessible it needs to be. There are distinct advantages and disadvantages to the different choices on the market.

The old beige standby.

For easy internal access, flexibility and expandability you can't go past a standard ATX tower case. If you have enough room to hide the box away you can strap on a wireless remote and pretend everything works by magic. The major advantages of desktop cases are the number of drives that can be mounted, so if you want a killer PVR system then this means little future compromise.

The other thing to keep in mind is that this size case will allow for full ATX motherboards to be mounted, so it will provide the maximum number of PCI and IDE slots of all the form factors.

It's not a desktop PC case, honest!

There has been an explosion in the number of cases tailored to home theatre use. Most major manufacturers have HTPC cases, but they vary hugely in expandability. The most common points of difference are the types of PSU supported, the number of drive bays and the size of motherboard and expansion cards that can fit in the case.

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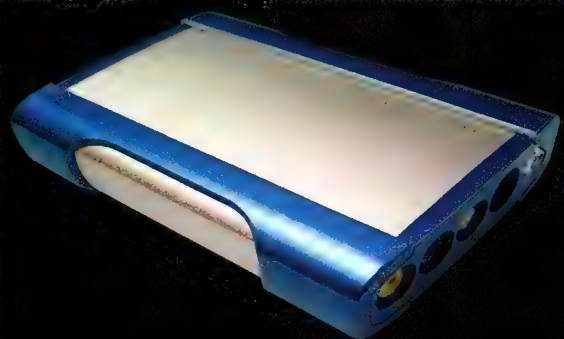
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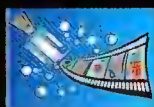
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Ideally you want a case that allows a normal PSU, if only for cost, and enough vertical space to fit full height PCI cards. The actual motherboard size is not that important, the existence of the nForce2 chipset for the Athlon XP means that there are micro-ATX motherboards with all the functionality you need, including TV-out support.

Apart from that it's a matter of aesthetics. There will inevitably be a case on the market that fits with your existing entertainment gear. Don't get too worried about whether the case has a remote control option or not, an inbuilt VFD with IR remote is nice, but aftermarket remotes are available.

Small form factors

While small form factor PCs started life as general PC replacements, the latest generation features a big proportion targeted at home entertainment. Many companies have models that feature funky hi-fi style displays and BIOS based media players that do not require the PC to be running for radio, MP3 and CD audio playback.

Unfortunately the remote controls that ship with these units only control those functions, and the display only works when in this mode. For all the novelty value that this offers, it is not a seamless way of operating.

The best choice is finding a small form factor PC that runs silently. That way you can keep it on all the time and have all the functionality at your fingertips, rather than a small subset.

Keep in mind audio levels and expandability when choosing a small form factor, there will be limited expandability, with a maximum of one AGP and one PCI slot in most models. This is usually compensated for by comprehensive integrated features like video and audio.

Motherboard

Choosing the right motherboard can save both money and space when building an HTPC. Most of the decision will come down to the chipset you use, and there are some highly suitable options out there.

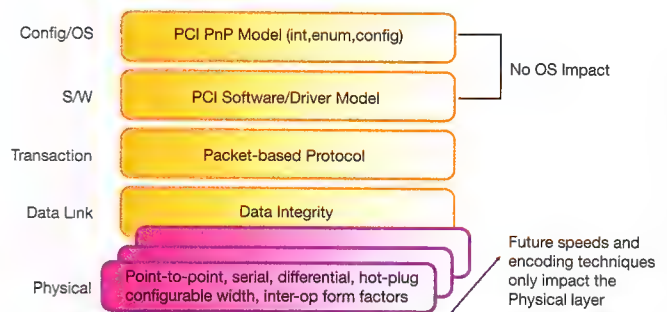
Probably the best all-round chipset is NVIDIA's nForce2. Not only is the Athlon XP a nice cheap processor, the chipset features the best combination of integrated graphics performance and Southbridge features. Its integrated graphics core features hardware MPEG2 decoding (MPEG2 being the format DVDs are encoded in), and control panel support for HDTV output is imminent.

NVIDIA's Southbridge features a higher class of audio than other AC '97 codecs, with support for Dolby 5.1 audio (which is decoded onboard but remember that you will still need to run the audio output through an amplifier if you are using unpowered speakers). It also has good USB 2.0 and FireWire

BELOW: An ATI ALL-IN-WONDER with TiVo support.



support built in. For the Pentium 4 and Celeron (yes, this is one of the few applications where the Celeron will actually work), ATI's RADEON 9100 IGP offers some of the best integrated graphics on the market, with hardware MPEG2 decoding as well as other video



ABOVE: PCI Express will provide components with additional bandwidth.

enhancement features. HDTV support is only available via a Component Out adaptor that is only available for the North American market.

ATI's Southbridge also lets the chipset down. It still has some nasty USB bugs that are about to be quashed with a new Southbridge that's being released to manufacturers sometime soon; and it inevitably comes with the decent but not spectacular realtek AC '97 audio codec.

The next generation of chipsets from Intel should provide better support for home entertainment needs. The replacement for the ageing AC '97 audio codec, dubbed Intel High Definition Audio, will make its debut, as will Intel's next generation of Extreme Graphics (it's becoming harder not to laugh when using that name). It will also come with good Gigabit Ethernet support, via the magic of x1 PCI-Express.

Video

If you decide to go for a discreet graphics card in your HTPC box there are several options. Hardware MPEG 2 decoding is now a standard feature of graphics cores, and while we are unsure what will be supported in ATI's R420 chipset, NVIDIA's NV40 features not only MPEG 2 but also Windows Media 9 support as well as HDTV encoding in hardware.

One of the most interesting graphics chips for home entertainment is S3's Deltachrome. While NVIDIA and ATI have battled it out for 3D graphics performance, S3 has concentrated on bumping up the video processing for Deltachrome. It has inbuilt HDTV encoding and VIA's Chromotion Video Processing Engine, which has flexible hardware decoding with support for both MPEG 2 and Windows Media Video.

ATI has the most obvious range of products for HTPC use, the ALL IN WONDER range. These cards incorporate TV tuners and in some cases an RF wireless remote control, called a Remote Wonder, which attaches via USB. There is a lot of plug-in support for using ATI's hardware and software in conjunction with HTPC interfaces, and forums full of people squeezing the most out of the AIW cards.

NVIDIA has its personal cinema range, which comes in the form of a small breakout box that attaches to certain video cards. The advantage of this is that you can upgrade your video hardware without needing to replace the box, but for HTPC use this is not an important feature. NVIDIA's remote control unit is from the same X10 family of OEM models as ATI's remote wonder product.



TV-out is a pretty standard feature on all cards at the moment, but as mentioned above, HDTV support is not great for PAL markets. If you want HDTV then we recommend getting an integrated solution with an AGP slot, and looking into a discreet video card once more suitable hardware becomes available.

TV tuners

If PVR functions are important then you will want to add a TV tuner to the box. Unfortunately this legally means only free to air television, as there are no officially sanctioned satellite or cable tuners in the Australian market. Analog TV tuners are commonplace nowadays, and vary mainly in the quality of the software paired with them, as there are very few types of tuner hardware in the market.

However digital television tuners are finally available for PCs in Australia, even if the online programming isn't quite

up to scratch. A digital television tuner will probably set you back as much as a bottom-end digital set top box would, but it provides much more flexibility, like being able to run it as a PVR. If you need a tuner, we heartily recommend going digital.

Audio

The audio market in general has become pretty stagnant over the past few years. While sound systems are beyond the scope of this article, the hardware used to generate the sound is important. The most important thing to remember, no matter what sound hardware you choose, is that you will need an amplifier if you aren't using powered speakers.

We found the best choice in the market for Audio is Creative's Audigy range. For a HTPC there really is no need for fancy breakout boxes or other extras, so a base model of Audigy 2 ZS would be great, but any of the Audigy range of cards will be fine for sound generation.

Even without getting into the specification differences, the Audigy sounds noticeably better than an AC '97 based system. NVIDIA and VIA have high quality integrated audio solutions as well; VIA already has some discreet audio solutions using its Envy24 chipset and while NVIDIA has broached the possibility of discrete Sound Storm audio cards to make up for the lack of audio in its NForce3 Athlon 64 chipset we have not heard anything for some months about its plans.

Storage

Serial ATA is a great choice for an HTPC – the system will feel smoother and the cabling will help keep cooling down. However, if you wish to use Serial ATA as a primary drive then we can only really recommend an Intel chipset using its ICH5 Southbridge. This is the best implementation of SATA so far,

and other solutions are a pain to set up for primary drives.

Whether Serial or Parallel ATA, the type of drives you use in your HTPC will be determined by how you wish to use the PC. If you wish to use the box as a PVR, then you need capacity, capacity, capacity. Most PVR software records in MPEG 2 format, which is high quality but takes up a lot more space than you would expect. Think about 2GB an hour for an average package.

Remember, the more drives you have the more noise and heat you will need to deal with.

How easy is it to create your own media centre PC? As easy as putting this month's cover CD in and rebooting! We've created a completely self-contained bootable media CD for you. We recommend you dedicate an older, or spare, PC to entertainment duties. It's Linux-based and is fully featured, and hand-crafted by Atomic. So put your old bits to work giving entertainment pleasure the Atomic way.

Build your
own with
atomic



Remote control

To truly enjoy your HTPC you really don't want the hassle of using a keyboard and mouse. If you need to maintain your box, then you can plug them in, but for day-to-day use nothing beats a remote control. There



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for day-to-day use nothing beats a remote control. There are a lot of remotes out there, but they are surprisingly hard to find in Australia.

PC remote controls are mainly based around infra-red, but there are a few models that use RF.

One of the great things about PC remotes is that you don't have to worry about the software that comes with them, thanks to an amazing little program called Girder (www.girder.nl), which allows you to completely customise remote control functions.

Software

It is the way you set up the software that will determine how good an HTPC you have. The good news is that this month's cover CD is a complete media player, just throw it in and boot up into a Linux environment tailored for playing stuff.

The other option is to go with a Windows XP-based system and use Girder and another piece of handy software to simplify navigation and make the HTPC feel more like a piece of consumer electronics equipment.

The most flexible and solid solution for an HTPC interface is a little program called myHTPC

(www.myhtpc.net). It's freeware for personal use and has a huge community of users that actively contribute to the forums.

Based around XML, the configuration for myHTPC is quite simple. You can tailor the positioning and size of buttons, backgrounds and fonts, but the program is much more powerful than that. Rather than be locked into set categories, myHTPC allows the end user to structure navigation exactly how they want it. It is done at the top level in the configuration program, either through the cop-out wizards during install or hand crafted in the setup menu.

For example, setting up a music collection involves not only mapping the directories of the music across your network but if you keep a standard file structure then you can also tell myHTPC exactly how the structure is built. This lets you display the collection in the most intuitive way. By using plug-in DLLs available for the website you can also select which media player you wish to use for both audio and video.

Besides media, myHTPC also contains a weather forecast module that can dynamically update from the internet. It's a bit fiddly to use so just try typing the name of the city you want into the search field and hit update.

This should show you a list of similarly named cities, just select the one you want and you should be able to get not only the current temp but the forecast as well. myHTPC also allows you to link to a radar image, which is very cool indeed. To do this is a little tricky, but worth it in show off value. Head on over to

<http://mirror.bom.gov.au/weather/radar/> and click on the area you want. When the radar image comes up, right click on it and select Properties. The image URL will include a GIF extension, then a question mark and some numbers. Just copy the URL up to, but not including, the question mark. This URL is the one you want to use. For example, the Sydney radar map can be found at <http://mirror.bom.gov.au/radar/DR033.gif>.

myHTPC also has functionality for browsing emails, the web and files. This is all customisable, but it's advisable to not get too carried away trying to pack everything into the interface. Remember what you wish to use the HTPC for and stick to getting that working as smoothly as possible.

What next?

Whichever solution you choose, you can be guaranteed it will be a lot more flexible than what is only a few years down the track. While home media networks are still in their infancy they are still about file management and ease of use. However the lessons that the record industry thinks they learned with Napster are going to come crashing down on this sphere before too long.

Already a lot of work is going into ensuring the movie content is copy protected when being distributed over the net. Home media networks open up new issues for copy protection, such as ensuring that media being streamed wirelessly cannot be intercepted and siphoned off by

It's freeware for personal use and has a huge community of users that actively contribute...

someone who hasn't paid for it. This initiative is called Digital Transmission Copyright Protection over Internet Protocol (DTCP-IP), and is the evolution of an initiative started years ago in an effort to protect the movie industry from piracy as it moved towards streamed media as a distribution method.

DTCP-IP is only one of the industry initiatives in this realm. Last year the push into the home resulted in the formation of the Digital Home Working Group. This is an industry body comprising the powerhouses of the IT and consumer electronics businesses, and its charter is to develop new interoperability standards between these two traditionally disparate worlds.

While this means that soon we could realise the utopian ideal of our home entertainment system talking natively to our PCs, it also means that as part of the bargain the media will be as locked down as possible to ensure that piracy is minimised.

For now, setting up an HTPC is a fun exercise in doing it yourself. The options are out there for both hardware and software tinkering, as well as some powerful standalone solutions. Don't complain about there being nothing on TV, do something about it!

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The Amber Technology logo, featuring a stylized orange waveform above the word "Amber" in a bold black font, with "TECHNOLOGY" in a smaller black font below it.





Reviews



To whom it may concern,



The 'Enthusiasts' make the following statement to the world at large.

We want fast. Sometimes we don't have the money so we dream about it, but if we do have cash, it goes on the fastest, marketing be damned.

There is a point though, Intel and AMD: We ain't going to spend three times as much for a little bit faster (unless, of course, we win the uber-Korean world

Starcraft championships).

To Intel and AMD: Overclocking sells your brand. Nurture it.

To those who advertise technology: We want specs, we want clockspeeds, we want to use that great visualisation engine that is our mind to imagine just how fast product x will make our system go.

Microsoft: We think you are evil, but secretly thanks for Xbox, and Motocross Madness ruled.

To those who advertise games on TV: Show us gameplay. Everyone loves a gag, but cut scenes do no-one justice. Good work Nintendo on that front.

To Xbox: You shoulda showed that baby ad EVERYWHERE. It was great.

To PlayStation: Get Chris Cunningham to do more ads. He does obtuse well.

To anyone who ever decides who does game soundtracks: Ask someone cool to do it. And not just slap down songs. Places to start, two record labels - Warp and Ipecac.

To the RAM manufacturers: Forget about overspec'ing RAM until it bleeds. It pays to make it compatible first.

To the sound card manufacturers: For the love of god, somebody innovate.

To NVIDIA and ATI: Thank-you for pushing game development so that we actually see those pretty features you put into those chips of yours.

To NVIDIA and ATI: GPU and VPU. They are the same fricken thing, it just confuses people.

To Blizzard: Thanks.

To Rockstar: Thanks.

To Valve: It better be orgasmically good.

To VIA: We still love you.

To John Howard, Prime Minister: Adopting the Digital Millenium Copyright Act is going to come back and bite you in the arse.

To Mark Latham, contender: Letting them adopt the Digital Millenium Copyright Act is going to come back and bite you in the arse.

To all games publishers: Release the big titles on DVD-ROM. We will actually thank you for it.

To the record industry: Stop and think before repeating the PR disaster of the States.

To the hardware websites of the world: It ain't a soap opera guys.

To the hardware websites of the world that get it right: Good on ya.

To www.whirlpool.net.au: Congratulations on the rare achievement of being an essential site.

To Peter Jackson: Thanks for not screwing it up (although *Braindead* was better).

To George Lucas: Words cannot express our dismay.

To Lian-Li: We may have moved on, but none of us have drooled over a case like we did the first time we saw one of yours.

To Atari and Ubi Soft: You may be French but we love ya all the same.

To Ubi Soft: Thanks for ending the Prince of Persia molestation.

To Valve: Here's an idea. Why not stop burning money on Condition Zero and release it for free, you'll make it up on Half-Life 2 anyway, and stem the nagging.

To Apple: A friend of a friend tells me iTunes actually gets the web music thing right. On ya.

To the open source community: You rock.

To the LAN scene: Bring back the good ol' days.

To the manufacturers that make computers glow: You occupy a special place in our hearts.

The above is entirely the somewhat deranged opinion of John Gillooly and not a blanket statement. Unless you want it to be. If something really irks you, then I'm forever lurking at jgillooly@atomicmpc.com.au. Give me your best.



artomic

MAX LIVES HERE no.5 by Oliver Hilbert

The name of the image simply came about while I was passing time waiting for test renders to complete. All in all the project took around 30-40 hours to complete. It was created in 3ds max 5.1 and rendered through Brazil with advanced HDRI lighting and reflection. The final render at A4 size took 12hrs! After some colour correction and image preparation in Photoshop, it was done.

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Benchmarks

Welcome to the freshly squeezed, entirely new version of the *Atomic* benchmarking page. Gone are the legacy benchmarks and in their place are a set of tests designed to cope with the next year's worth of hardware.

So here's your cup of *Atomic* Testbench – 2004 Edition.

Aquamark 3

Based upon Massive Development's Krass engine, Aquamark 3 is *Atomic*'s new synthetic gaming benchmark of choice. It has a range of tests built into it, of which we predominantly use the standard test. This outputs an average framerate over the length of the test. We also use the Pixel Performance Test, which benchmarks the number of pixels that the card can process. The Pixel Performance Test is especially relevant when comparing different graphics architectures.

www.massive.de

Call of Duty

Atomic has used Quake 3: Arena as a benchmark since the dawn of time, but unfortunately id Software's deathmatch is getting too long in the tooth for meaningful gaming results. Call of Duty uses a heavily modified Quake 3 engine and is a much more relevant gaming benchmark. We test using a custom multiplayer demo to ensure replicable results.

www.activision.com

Unreal Tournament 2003

We had originally planned to replace UT2003 with the new UT2004, however it has been delayed to early 2005. For now, we are continuing to use UT2003. The Unreal Warfare engine that powers UT2003 is widely used in games, including America's Army and Deus Ex: Invisible War. We benchmark with prerecorded

fly-by demos as the results from the botmatch demos vary from run to run and this inconsistency makes it impossible to arrive at a correct result.

www.epicgames.com

3DMark03

3DMark03 is under a cloud as a video card benchmark and is used sparingly for that purpose. We use 3DMark03 for its CPU test, which loads the processor nicely with a bunch of software shaders and provides a good indication of performance.

www.futuremark.com

3DMark2001SE Pro

This DirectX 8 era benchmark is still one of the best synthetic measurements of system performance. While we continue to use 3DMark2001SE Pro, we will always do it in conjunction with game benchmarks to provide a full performance picture.

www.futuremark.com

SYSmark2002

While it is certainly the most temperamental benchmark that we run, SYSmark2002 is an invaluable tool for comparing the performance of different systems. The current version is under dispute because of an alleged bias towards Intel CPUs, but the new SYSmark2004 is due any day now and it should rectify these performance discrepancies.

www.bapco.com

Testbenches

Atomic has now updated our Athlon testbench to an Athlon 64 3200+ with ASUS K8V Deluxe motherboard and a Pentium 4 3GHz with an ASUS motherboard.

We have also updated our hard drives to take advantage of Serial ATA, deciding on Western Digital's high-speed Raptor model to minimise hard drive-based bottlenecking of the testbench.

The rest of the testbench hardware is still being finalised, we are currently awaiting mass production of the new generation of graphics cards.

Both test systems use Windows XP Professional with Service Pack 1, DirectX 9.0b alongside the latest chipset and video card drivers.

• AMD Athlon 64 3200+ system – ASUS K8V Deluxe motherboard – Supplied by ASUS:

www.asus.com.au

• Intel Pentium 4 3GHz – ASUS mobo – Supplied by ASUS

Common components

• 36GB Western Digital 10,000rpm Raptor Serial ATA drives

– Supplied by Western Digital:

www.westerndigital.com

• Corsair TwinX XMS3200 matched dual-channel DDR-RAM

– Supplied by Altech:

www.altech.com.au

• Hercules Prophet II GTS 32MB

– Supplied by Guillemot:

www.hercules.com

• 64MB Apacer memory keys

– Supplied by Anyware:

www.anyware.com.au

• ASUS 52x CD-ROM

– Supplied by CASSA:

www.cassa.com.au

• Belkin PCI FireWire card

– Supplied by Belkin:

www.belkin.com.au

• Belkin PCI USB 2.0 card

– Supplied by Belkin

Benchmark settings

Aquamark 3

Standard Test

• 1,024 x 768; 32-bit colour; no FSAA; 4x anisotropic filtering; maximum details.

Pixel performance test

• 640 x 480 standard settings.

Call of Duty

Standard Test

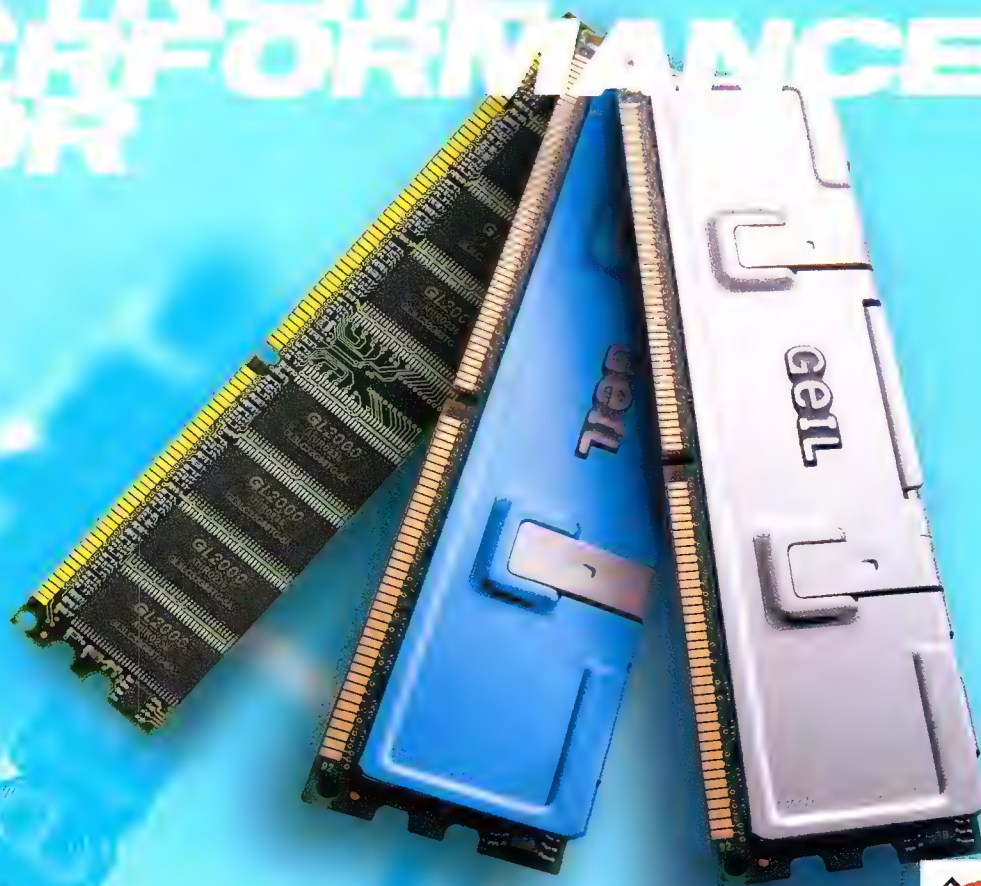
• 1,280 x 1,204; Character textures – extra; General textures – extra; Trilinear filtering; 32-bit textures; World dynamic lighting quality – nicest; Model detail – maximum; Show blood – yes; V-sync – off.

Hot awards

The Atomic HOT award is given only to the most kickarse products to hit the Labs. These are the products that receive a score from us of nine, or greater, out of a possible 10.

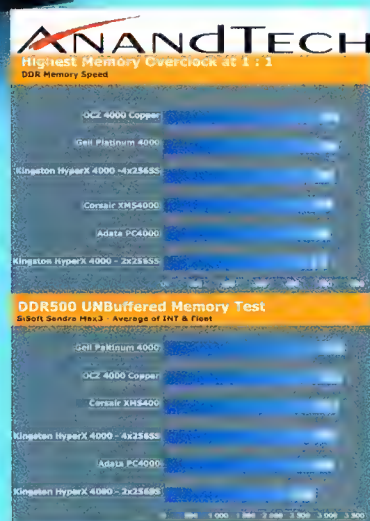


EXTREME PERFORMANCE DDR

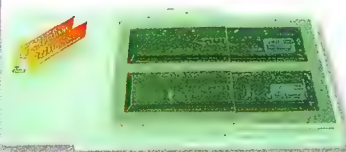


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- Lifetime Warranty

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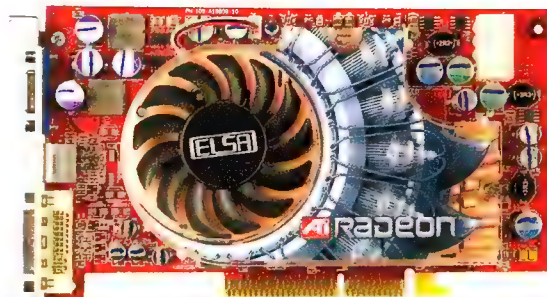
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Framerate

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ELSA FALCOX 9800XT

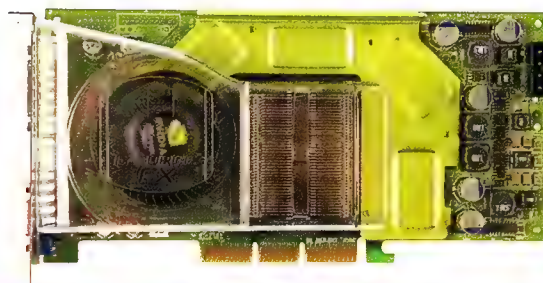
Specifications: ATI RADEON 9800XT; 256MB 256-bit DDR RAM; 400MHz dual RAMDACs.

Core speed: 412MHz **Memory speed:** 730MHz **Price:** \$760

Supplier: Altech www.altech.com.au

Har, poke me other eye out. Thar be another nine-tee-ate hundred extee in the barrel. Apart from those two sentences completely unreasonably using pirate talk, this card is no different from the rest seeing as only ATI manufacture 9800XTs. Which is great, as it's yet another mad, frame-hungry, power beast set to do only three things: digitise your retinas, rock your mobo and set fire to anything with 'FX' in it. Pillage your piggy bank and grab one if you hold in high reverence framerate dominance.

ELSA www.elsa.com.tw



Jaton FX 5950 Ultra

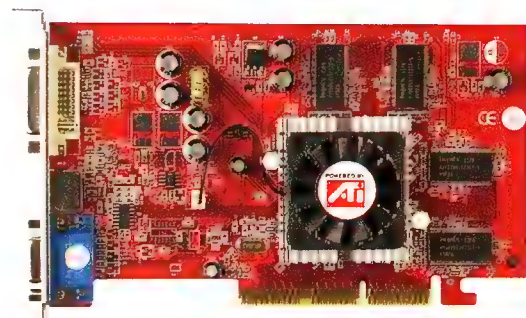
Specifications: NVIDIA GeForce FX 5950 Ultra; 128MB 128-bit DDR RAM; 400MHz dual RAMDACs.

Core speed: 475MHz **Memory speed:** 950MHz **Price:** \$720

Supplier: Australia IT www.australiat.com.au

Besides not being able to topple the 9800XT reign of fire and brimstone, the main problem with FX 5900s is the heat they produce – regardless of the fact that they have heatsinks even your lawn whipper-snipper would be proud of. The only real purchase-deciding aspect is the price factor and at the time of writing, this card is reasonably priced compared to a 9800XT – but that's bound to change. Unless you really need an Ultra NVIDIA card, just play the waiting game.

Jaton www.jaton.com.au



Xpert Vision 9600LE

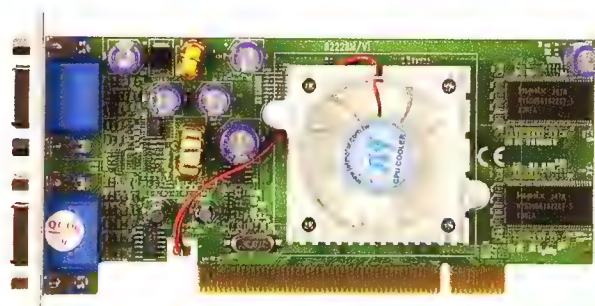
Specifications: ATI RADEON 9600; 256MB 128-bit DDR RAM; 400MHz dual RAMDACs.

Core speed: 325MHz **Memory speed:** 400MHz **Price:** \$190

Supplier: Altech www.altech.com.au

Chilly yet blinding fast – these are terms that are now fully associated with the fantastic 9600XT series of cards. Well let's not forget the standard 9600 all too quickly – it also is based on the chilly .13-micron process. It's simply not as powerful and to keep the costs down, it's embedded with TSOP modules instead of BGA. It still sticks to ATI's line of destruction though, giving off loads of smash for cash. Better than a free lunch, this is exceedingly recommended for a home theatre system.

Xpert Vision www.xpervision.com.tw



Jaton FX 5200 PCI

Specifications: NVIDIA GeForce FX 5200; 128MB 32-bit DDR RAM; 350MHz dual RAMDACs.

Core speed: 250MHz **Memory speed:** 333MHz **Price:** \$195

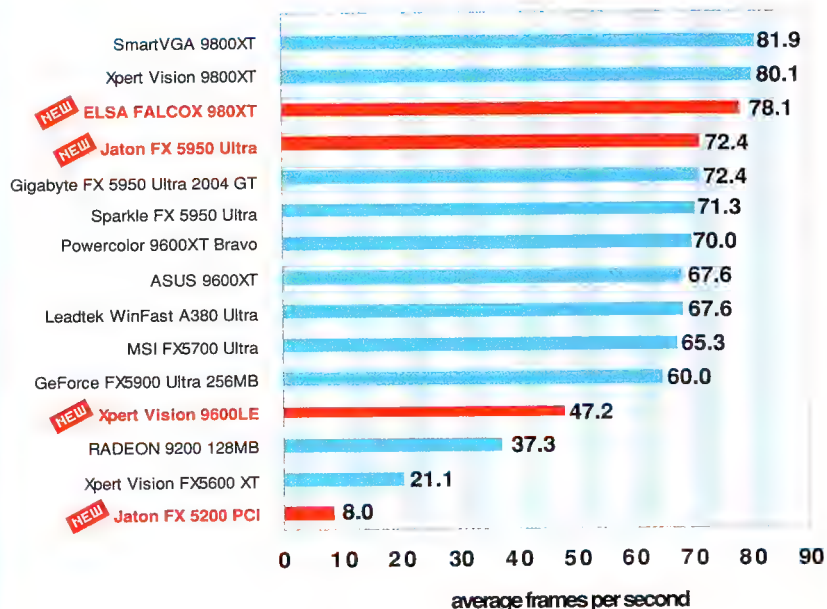
Supplier: Jaton www.jaton.com.au

It isn't often you find new 'new' PCI video cards, seeing as they are limited to the 32-bit bus. We were curious to check out transform and lighting on this, as compared to software T&L. Using 3DMark2001SE Pro (at 1,024 x 768), the 3DMarks resulted in 4,622 for pure hardware and 2,866 for software T&L. With 128MB DDR RAM (TSOP) and an FX chip, it canes software T&L but it still ain't for gaming. A neat move was the inclusion of dual D-Sub outputs. Positively a top card to grab for a quiet AGP-less home theatre system.

Jaton www.jaton.com.au



Call of Duty – 1,280 x 1,024



Video cards

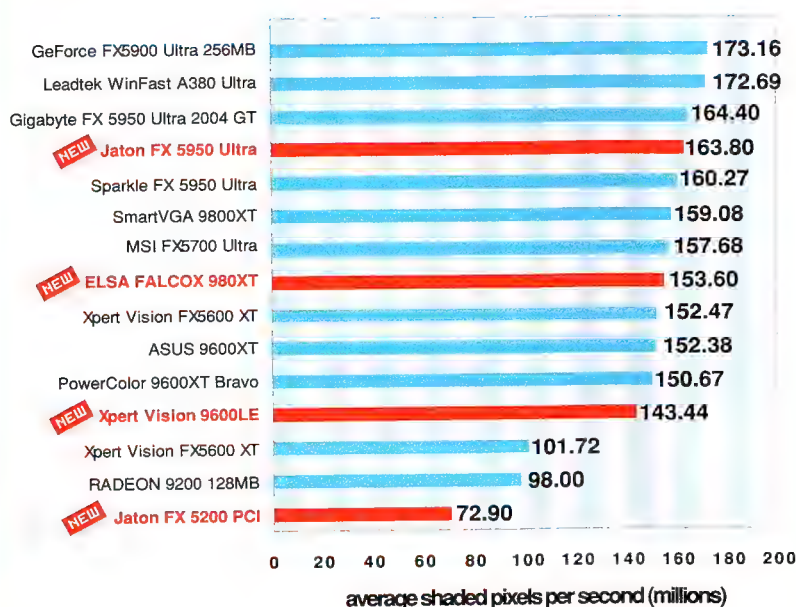
NVIDIA is back playing silly buggers, yet again. As if driver 'tweaking', as it calls it, was going out of fashion, NVIDIA's marketing department has come up with a new brilliant idea. Now renaming all their past, present and future 'SE' cards to 'XT', NVIDIA is really pushing the boundaries. This is obviously a stunt to either piss ATI off or confuse consumers into purchasing slow cards.

PCI Express preview units will be arriving soon and once we've tested them, you can be certain that we'll let you know if it's time to sell random organs.



ABOVE: As you can see, the PCI-Express interface isn't all that different from a standard PCI interface. What it means in real terms is more bus bandwidth. Yah!

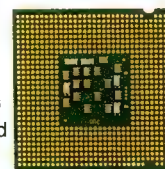
Aquamark 3



CPUs

The Prescott; it's here kids, but Intel's new architecture pumps out less power than anticipated. There is light however – the Atomic Spy Ring has its greedy eyes set on the currently non-existent, *purely hypothetical* 2.8E Prescott processor for reasons we'll let you guess for the time being.

Details are scarce at the moment, but pin-less processors – based on the Prescott core – are headed your way in the very near future. What exactly are they? Using technology ingeniously named Land Grid Array (LGA), they're basically flat CPUs based on BGA technology – processors minus the pins that sit on an array of 775 balls (reportedly named Socket T).

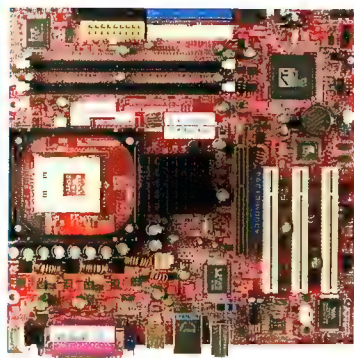


RIGHT: Land Grid Array (LGA) processors will take the hassle out of installing CPUs. No more bent pins... well, unless you attack your motherboard with pliers.

PowerColor A300M-E1384

Specifications:

2x DIMM dual channel DDR; RADEON 9100 IGP; two PATA ports; AGP 8x; 3x PCI; Gigabit Ethernet; IEEE1394; 5.1 AC97 audio.



Joining in on the Micro ATX motherboard rat race, PowerColor (the highly popular video card manufacturer) has unleashed its latest edition, equipped with the legendary ATI 9100 IGP (RS300) Northbridge and IXP150 Southbridge. This mobo is less featured than some boards already out there, as it doesn't come equipped with onboard SATA ports. As the IXP150 doesn't natively support SATA, this does keep the cost down, as there's no

need for an additional controller. Add the fact that the market isn't exactly bopping its head with glee over SATA, and this becomes a moot point.

The layout is fairly standard for a micro board, though there is one annoyance. DIMM slot 1 comes in tight range to most AGP cards, meaning the video card should be removed before changing memory unless you get your thrills out of destroying random components. And it would have been nice if the two FireWire ports had been included on the IO panel area instead of via a pin-header, taking up one whole precious expansion slot.

As expected, like most other micro boards, this one is terrible for overclocking. In fact, there were no overclocking options other than to select your memory speed, which was still limited to the standards of DDR-200 through to 400. Thankfully, supporting 800MHz FSB CPUs, it wasn't all that bad in the beefy performance stakes. With the ability to throw a maximum of 2GB RAM

at it, laugh hard – as if you'd give your theatre machine more than your personal box. . .

Testing with a 3.0GHz P4 and two 256MB sticks of DDR-400 showed it to be a decent performer, spitting out (in PCMark2004) 3,521 PCMarks with onboard video and 3,668 PCMarks with a GeForce FX5200. In 3DMark2001SE the onboard 9100 IGP produced 4,995 3DMarks with the FX5200 chirping over at 7,538 3DMarks. It's obviously not for hefty 3D apps, but it's certainly a stable performer.

This fanless board will fit snug at home in a theatre box. With a Gigabit Ethernet port, 5.1 surround sound audio, two FireWire ports, plenty of USB ports and some half decent onboard video, it awaits your lounge lazing action. Plus, it's red.



8.5/10

Supplier:
Australia IT
www.australiat.com.au

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PowerColor
www.powercolor.com.tw

Phone:
Australia IT
(03) 9543 5855

Price:
\$121

Samsung SyncMaster 172x

Specifications:

10,000rpm; 8MB cache; Serial ATA connection; Molex and SATA power connectors.



Samsung's SyncMaster 172x is pretty much the epitome of what any serious TFT freak would consider as a top model. Without even turning it on, the 172x just looks like it has the goods. It's got a double-hinged neck which gives a fair bit of flexibility when height-adjusting the display, and the hinges are really solid so the screen will stay in place once sorted.

The rear of the base contains the various inputs including RGB D-Sub, DVI-D and external power

which keeps your desktop free of cables because they trail directly off the back.

The monitor also has an amazingly thin bezel, giving the SyncMaster 172x the appearance of being nothing but screen. Underneath the front bezel are the OSD (on-screen display) controls for adjusting and configuring the display's parameters. With these buttons hidden unobtrusively under the thin bezel it leaves you with nothing to look at except the large 17in display surface.

And it's awesome. While the SyncMaster 172x has some of the most appealing TFT design to a grace a desktop yet, when it's running it's even better. The 172x is the first TFT to market with a speedy 12ms (millisecond) response time, quickening its time-to-rise/fall from the previous 16ms, and easily kicking the arse of any TFT still insisting on a pedestrian 25ms response time.

While this speed difference isn't as noticeable between 12 and 16ms, it does make a difference, particularly when gaming or watching a movie on it. We also tested this monitor with DisplayMate (www.displaymate.com), which is used for gauging a display's ability to reproduce blacks, greys and colours, judging its underlying electronics as well as testing its brightness and contrast to its limits.

The SyncMaster 172x is one of the best TFTs we've ever evaluated, with extremely high scores in every single count. It may cost over a grand, but we can't imagine a use that this display cannot handle.



9.5/10

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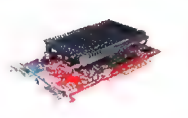
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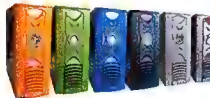
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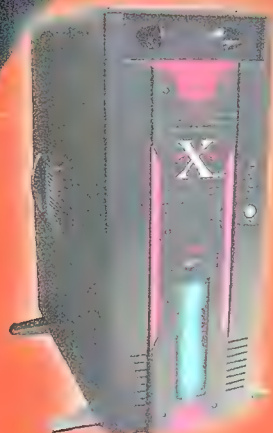
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speed, temp. sensors and 1 Firewire 2 and
USB2.0 slots
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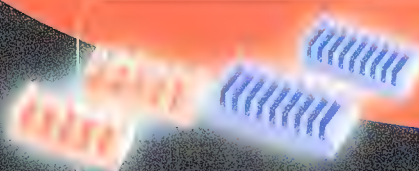
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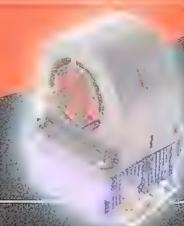


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ELSA GLADIAC FX 935XT

Nathan Davis checks out NVIDIA's latest midrange player and explodes in XTasy.

Specifications:

GeForce FX 5900XT;
390MHz core clock;
128MB 700MHz 2.8ns
DDR on a 256-bit bus;
extra power required.

Supplier:

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Website:

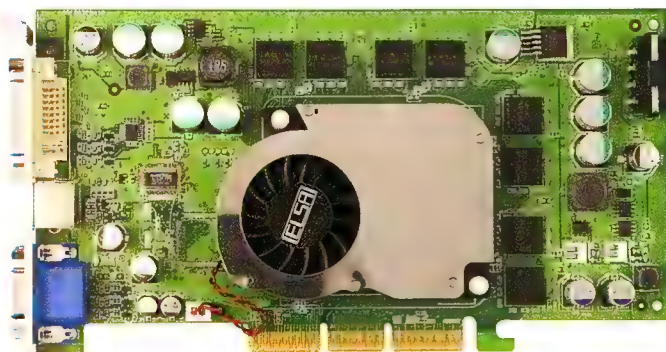
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In case you've been residing in a bowl of murky pumpkin soup, you'll know that NVIDIA is at the marketing game again. Entering the post 'driver-tweaking' debacle, NVIDIA has moved on and is now associating its low-end cards with the high-end beast slayers from the unstoppable Beowulf, ATI. Its cards just can't do justice when lined up against a similarly specced ATI card, so what's the next logical thing that could possibly be done? As John Gillyool puts it, 'NVIDIA are

magnificent bastards' and it hasn't got a problem continually proving that. This ELSA ex-'SE' midrange card is entering the market badged with 'XT' instead.

ELSA was once the primary Quadro card manufacturer in Europe, however it had disappeared off the map for a while as the result of dismal money problems. We guess not everyone wanted a Quadro. But the company's back in town, now firm in the competitive consumer retail market and fast growing a reputation in Asia for its high-quality cards. It will be interesting to see how it fares in our aggressive corner of Oceania.

Now that we're just getting over the three-year long phase changeover to the newer memory module type used in video cards – Ball Grid Array (BGA) – most video card manufacturers are using it instead of the cheaper, older TSOP modules. Naturally this allows for much higher frequencies but at a far cooler rate than TSOP could ever hope for and the added bonus that the contacts between the memory modules and PCB are much closer, hence faster performance. Some manufacturers, however, are still using TSOP modules for their budget cards. Not ELSA, which is apparently why its cards are more expensive than others.

You could be forgiven for thinking this is a Quadro card, but this look-alike contains nothing but a GeForce FX 5900XT GPU. ELSA is obviously basing its design for new cards on its old Quadro designs. The primary technical differences between the two cards

(FX 5900 and FX 5900XT) are the slower core and memory speeds. On the FX 5900XT, the core speed is dropped to 400MHz as compared to the usual 450MHz on an FX 5900 – the memory is also reduced from approximately 850MHz (standard FX 5900 memory speed) down to an effective 700MHz. Naturally, this brings the FX5900 chip into the affordable budget market, and about damn time too. It also spells out 'overclock me'.

The results speak for themselves – the XT card is consistently less powerful but runs significantly cooler and quieter, while still spitting out competitive results. This just might be NVIDIA's new Ti4200.

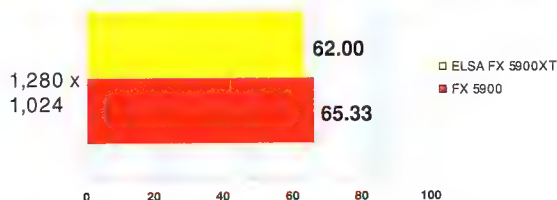
For antialiasing, there was an anticipated drop of about 12 percent in 3DMark01. On the other hand is the incredible performance in the pixel shader department – there's really no difference at all here. This is obviously not an area that has suffered from the budget effect.

Tweak-wise, this beast overlocks like a pendulum with gravity set to nil – with stock cooling (no memory cooling) we pushed it to a stable 443MHz core and an impressive jump in memory to 857MHz, returning a higher 68.2 frames in Call of Duty. This card is neat.

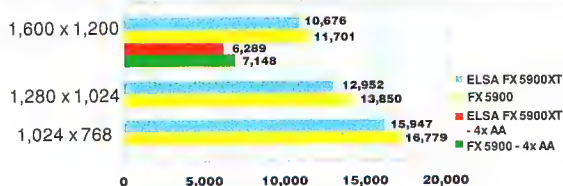
With NVIDIA riding the XT storm, it is indirectly raising the XT bar with this card. Cheap as heck, power levelling that of its older brother, cool running, very quiet, highly overclockable and there are also unconfirmed rumours that these babies can be flash upgraded to FX 5950s. NVIDIA has finally realised its potential – ELSA has pulled this off well. With 9600XT performance for an NVIDIA midrange card, the FX 5900XT is gold and going ape.



Call of Duty: 1,280 x 1,024 - normal



3DMark 2001 SE PRO



Aquaman

ELSA FX 5900XT

163.35

FX 5900

163.85

0 20 40 60 80 100 120 140 160 180

SCORE

9/10

Gigabyte GD-1703BP

Specifications:

17in TFT; 1,280 x 1,024 resolution; 16ms response time; 250cd/m2 brightness; 450:1 contrast ratio; RGB D-Sub.

Supplier:

Rectron Electronics
www.rectron.com.au

Website:

Gigabyte
<http://tw.giga-byte.com>

Phone:

Rectron Electronics
(03) 9561 6166

Price:

\$639



Gigabyte monitors are fairly new to Aussie shores, and the GD-1703BP is the first we've been able to test. First impressions are good, and this monitor conveys a sense of strength as it's got a really solid removable mag-alloy stand, silver metallic finishing but a smallish bezel along the top and sides.

Under test it also performs rather well, and was able to rate highly in DisplayMate. There were

a few problem areas though: the GD-1703BP had chromatic problems with white-level saturation, which meant that whites tended to bleed out with subtly shaded images. This also affected the colours a little, where gradations blended not because of superior colour management but because they were displayed with a slight milky shading to them.

In the real world this translated into sub-par DVD playback which not even messing with the contrast, brightness and colour controls could allay. However with less subtle colour shading (arguably with PC gaming where there's usually much greater and sharper contrasts), the screen was fine.

Aside from these problems, the Gigabyte GD-1703BP was a pretty average TFT.

There's nothing that really defined it as a standout display though, which wasn't a problem in

itself as it's quite capable with most uses. It's got good viewing angles, the RGB D-Sub socket is placed nicely on the back of the screen so your cable plugs directly in, and it's got a very solid build.

While the GD-1703GP is certainly no Samsung SyncMaster 172x (see page 52), it doesn't come in at the same price opting instead for a cost \$460 cheaper. This alone elevates it – it's a damn cheap 17in TFT and pretty bloody good compared to other more expensive models – but both screens reviewed in this issue drive home that you do get what you pay for. While the Samsung's got everything you could want, the Gigabyte's a good compromise for those without the extra dosh.



6.5/10

Uned DIGN Home Theatre HV7

Specifications:

Micro ATX mobo; 430 x 135 x 452mm; 2x internal 3.5in and 2x 5.25in bays; supports standard ATX PSU; VFD module with IR receiver.

Supplier:

PC Case Gear
www.pccasegear.com.au

Website:

Uned
www.iuneeed.com

Phone:

PC Case Gear
(03) 9568 0932

Price:

\$550



Aluminium is the material to beat for good-looking cases. Chances are slim the spouse will understand the wonderful benefits gained from having a home theatre box, so slick cases are more likely to be Okayed for that pristine room. Depending on your personal tastes and wallet size, this just may well be the one.

Popping the top, inside it's a very clean layout with all edges nicely rounded – no human fluid seepage here. Fantastically, this case actually uses the more commonly sized PCI bays (four of them), not the horrid low profile ones, allowing the use of real

hardware. As a result it's a largish case, but to keep the size down it only supports Micro ATX motherboards – which is acceptable as most are cheap bastards, stacked with features.

Standard sized ATX PSUs, however, are supported.

There's plenty of space for passive cooling, but the lack of air intake is somewhat obvious. There's a grill under the dual hard drive bay and that's about it, bar the rear exhaust fan (room for two). But realistically, a powerful chip that requires serious cooling would be the last thing you'd want in a media box anyway.

For optical drives there are two stealth aluminium faces to replace the boring default front panel, giving any optical drive some DVD logo love. These easily attach to most optical drives.

The VFD display is a very neat addition to this case and seeing as

VFDs are boringly rectangular, here was the perfect excuse to give the case some nifty HAL9000 treatment, minus the eerie voice. An IR remote controller can be used with this, but isn't supplied, however it's also controlled via the standard 'Girder' application and as you may be aware, you can display practically anything that rocks your fancy.

Negating the minor cooling worries (it is a home theatre box), if you're after a greatly engineered box for your extreme lounging pleasures, seriously, check this out. Holy crap, it surely wipes the house clean of riches, but it waxes the place with pure quality.



9/10

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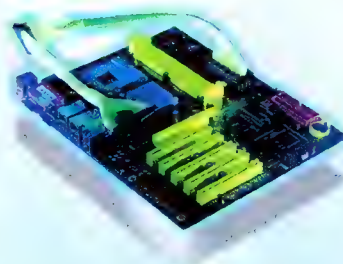
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AGP8X / 6ch Audio



LAN PARTY NFII ULTRA B

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FSB400 / Dual DDR400
SATA RAID / Realtek LANs



LAN PARTY NF3 ULTRA

Chipset nForce3 Ultra
CPU: AMD Athlon64FX-939
FSB 2000MTps/ DDR400
SATA RAID / Marvell GbE LAN

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Series

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Nebula DigiTV

Specifications:

USB 2 Digital TV tuner;
externally powered;
antenna passthrough;
four-in-one universal
remote control.

Supplier:

Hyper Reality
www.hyperreality.com.au

Website:

Nebula
www.nebula-electronics.com

Phone:

Hyper Reality
(08) 8381 6511

Price:

\$300



At Atomic we love the fact that cable TV brings us the sheer joy of being able to endlessly surf through channels of shite, but we really don't want to pay the premium. Thankfully the Digital TV age brings a similar level of channel bombardment (in Sydney there are four or five channels just devoted to broadcasting audio streams from parliament) without the subscription fees.

Coming from UK company, Nebula, the DigiTV is an external USB 2 Digital TV tuner. Simply plug

it into your antenna and PC, power it, load up the software and your PC is instantly ready to use as a digital set-top box. The key to this is the software package, which treads the fine line between ease of use and deep customisability, and with software and firmware updates Nebula is committed to improving these functions as time passes. You can easily set up the personal video recorder (PVR) functions of the device and record with a single click in MP2 format, although more advanced functions are made

difficult by the poor state of program scheduling in Australia.

The DigiTV unit that we tested also ships with a four-in-one universal remote control, which is quick and easy to set up for use with the DigiTV and also has the added bonus of being able to control other components of your home entertainment system.

While it is more expensive than a vanilla analog TV-tuner, you will find it hard to move away from the quality of the digital television image, especially if you are into using a tuner as a PVR.

For truly cool television without the dubious costs of cable, this is the way to go. Digital television is great, and with the Nebula DigiTV you get it in an elegant, highly functional way.

JG

SCORE

9/10

Samsung VFD IR

Specifications:

Vacuum florescent display; remote control;
IR module; display information from WinAmp, DVD software and system monitoring programs.

Supplier:

PC Case Gear
www.pccasegear.com.au

Website:

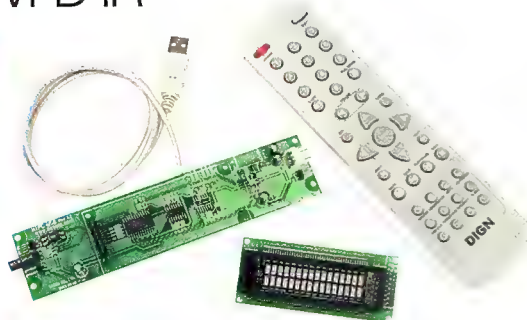
Samsung
www.samsung.com.au

Phone:

PC Case Gear
(03) 9568 0932

Price:

\$110



According to enlightened sources, the grungy cityscape of Las Vegas was once the place to go to experience the lure of lights. These days, most of us can make do with a mod shop catalogue and a tower. Money normally spent on an aeroplane ticket and flick knife somehow finds its way to funding cold-cathode tubes, star LEDs and fluorescent wire.

Most of this glamorous illumination comes in the form of text, be it shaped from neon lights or compiled in an array of Edison bulbs. Now we too can enjoy the beauty of lights shaped into words with Samsung's Vacuum Florescent

Display, or VFD.

The VFD is IR-capable, and comes with a remote. This remote, the display, required cables and assorted nuts and screws are

supplied in a thin cardboard box, OEM-style – the major advantage of this package being the low cost.

The display comes with a USB mount, which could pose a problem in the highly unlikely situation that your motherboard is USB-less. No software or instructions are included in the package – everything you'll need is available off the internet – the links are provided on PC Case Gear's website. PC Case Gear also has plans to host the files locally.

It isn't hard to set up – all you need to do is attach the display to the USB mount, and then plug the cable into an available port. The software, though, will be a source of

headaches – the IR/USB driver needs to be installed before you plug in the cable, and we couldn't get Windows XP to detect its presence without Service Pack 1. The 'Girder' display/programming utility was a nightmare to use, even with the online help (written by the community, not the developer). The DVDSpy plug-in for the Girder software also failed to install properly after repeated attempts and an update, which was probably down to the install file being a collection of batch files and VB/JavaScript.

The Samsung VFD IR is a terrific buy if you're looking for a cheap VFD. What stops it from scoring higher is the unintuitive software – so make sure you're informed of an alternative utility.

LB

SCORE

7.5/10

Even though Eskimos suffer less heart attacks than us Westerners, their large consumption of fish adversely affects the ability of their blood to clot. So, they just haemorrhage instead.



FX5700U
 "HOT"
 Atomic
 Jan.2004, Australia



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- Supports 6xUSB2.0 and 2xIEEE1394

FSB 400 Dual DDR 400 SATA RAID

IEEE 1394



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- Microsoft® DirectX® 9.0 & OpenGL1.4 optimizations and support



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VIEWPOINT AGP8X

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Dove Electronics Ltd
 Christchurch, New Zealand
 TEL:+64-3-338-4722
 FAX:+64-3-338-5564
 www.dove.co.nz

Arctic Cooling VGA Silencer

Specifications:

185 x 84 x 34mm; 278g; variable speed fan (1,200rpm low, 2,400rpm high). Packaged with replacement mounting brackets and syringe of thermal grease.

Supplier:

PC Case Gear
www.pccasegear.com.au

Website:

PC Case Gear
www.pccasegear.com.au

Phone:

PC Case Gear
(03) 9568 0932

Price:

\$27.50

Australia is no stranger to the apocalyptic summer; the season of wilting banksias and dried-up wattle, of burnt ironbark and hazy, sticky highways complete with the seductive odour of pancaked-cane toad.

Nor is your sweltering system ignorant of the rising humidity and boiling temperatures. To protect our precious computers from overheating, we find solace in water pumps, fans, freezers and heatsinks.

In a bid to keep the demon of smoking silicon at bay – from your video card at least – Arctic Cooling has come up with the VGA Silencer, a massive QTES-like heatsink with a variable speed fan. The Silencer is a replacement for the stock cooling on RADEON 9600, 9700 and 9800 cards, as well as the odd GeForce3.

The heatsink comes with a replacement mounting bracket, as well as some thermal grease in a cute, baby-sized syringe. A colourful instruction pamphlet accompanies the kit, and provides a breakdown of steps in English and German.



We tested the heatsink using a Sapphire RADEON 9600XT, and read temperatures using a thermal probe. The ambient temperature throughout testing was 28°C, and we stressed the card by looping a 3DMark2001 benchmark – 10 minutes with the stock HSF, 10 minutes with the VGA Silencer on its low setting, and then a final 10 minutes on its high setting. We took readings at predefined points, and came up with an average temperature for each run.

With the stock HSF, the Sapphire idled at 34°C, but sharply rose under load and averaged 46.95°C. The VGA Silencer, on its high setting, idled at 30°C, and 34.8°C under load. When switched to its lower speed setting, we got a nice surprise from the Silencer's

results – 31°C idling and 37.5°C under load.

Although a good performer, the Silencer was a pain in the rectum to attach. The first card we used, a Tyan Tachyon G9600, didn't accommodate the heatsink, and the fan plug on the Silencer is two-pin only. If you plan on picking the Silencer up, make sure it fits your card and motherboard, as its giant profile will knock two PCI slots out of commission. Otherwise, the VGA Silencer is a competent, cheap replacement for any underwhelming stock cooling.



7.5/10

Altec Lansing FX-6021

Specifications:

Total power: 75W RMS; SNR @ 1kHz: >75dB; Response: 32Hz – 18kHz.

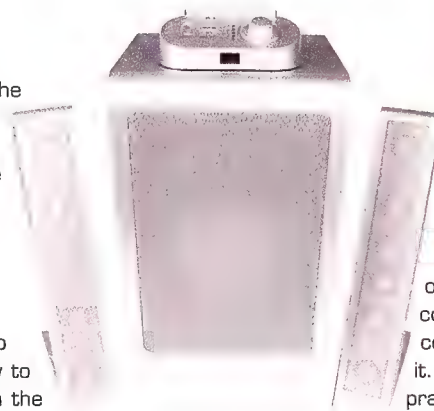
Manufacturers such as Creative, Logitech and Altec Lansing recognise the value in a quality PC/console speaker set, and strive to develop products that deliver the sound demanded by today's home audiophiles and hardcore gamers, while still remaining affordable for most.

The FX-6021 is only a 2.1 system but provides an incredible 13 speakers! Each satellite contains six 1in neodymium drivers, powered by three separate amplifiers and the subwoofer houses a 6.5in long throw driver with a rear firing port. The big-ar-se satellites, which measure 365mm x 64mm can be wall-mounted or fitted to the supplied bases, which allow a degree of tilting to assist in best speaker placement.

Also supplied are both wired and infrared remotes. The wired remote provides a headphone jack, an AUX input, and allows for volume and bass/treble

adjustments. The rear of the subwoofer provides all the connectivity, including L/R RCA inputs for consoles. Everything is colour-coded so you're not likely to need help from the instruction manual.

In terms of sound, this system was bloody good. The satellites are designed in such a way that the positioning of the drivers and a particular frequency filtering technique throws sound straight forward. This minimises the reverberation from desktops, ceilings and so on, that is heard from many other systems. An impressive field of sound is created by this method, with detailed and crisp mid to high tones. The bass was responsive and didn't bottom out with even the deepest tones



our music collection could throw at it. There was practically no distortion at any

but the most anti-social volumes. Having said that, it lacked a little of the punch we might have preferred. This didn't take much away from the overall quality, however, as a few hours of Project Gotham 2 left lumps in our shorts.

But you probably didn't need to know that.



9/10

Supplier:

Innovision
www.innovision.com.au

Website:

Innovision
www.innovision.com.au

Phone:

Innovision
1300 785 795

Price:

\$399



discreet
combustion

atomic

'Atomic Marine Scout'

I created the 'Atomic Marine Scout' robot-like thingy using mainly Bryce 5 and then the post work finished off in Corel Painter 6 and Universal Image Creator for the occasional lens flare. I hope it has a WD40 supply somewhere as things could get rusty.

Create the winning Atomic and win the latest version of combustion, valued at \$1,995, from discreet. Email a preview (no larger than 5MB) of your games or hardware-themed masterpiece to atomic@atomicmpc.com.au.





Games

Lax headroom

Imagine every proposition, affirmation and confirmation as a supposition. Logan Booker can't deal with the brain drain.



After spending the juicier part of the month submerged in the nanoscopic world of molecular science, much like Dennis Quaid with included submarine in *Inner Space*, there's only one thing I can say.

Stay educated.

OK, two things... also Meg Ryan is a bit of alright.

Like ionising radiation leaking from David Hahn's poorly conceived back-shed breeder reactor, so too is knowledge a delicate matrix of particles that ebb from the brain if left to decay. Reinforcement, by depleted Uranium-238 or not, is necessary, if not essential in the fight to survive that which is known as the 'Western World'.

It's comparatively easy these days to be so totally convinced of the legitimacy of a fact that, when you do somehow summon the intellectual fortitude to investigate said tidbit of knowledge, you suffer a pre-denial aneurism in an attempt to comprehend how you got it so wrong.

The Germans bombed civilians first. South Korea invaded North Korea. Samuel-cored C3s are faster than Pentium 4-cored Northwoods. Talk about being misinformed.

Although harder for those who have never seen me, imagine my surprise when I learnt that 'nanotechnology' is far from just sci-fi. It's reality. While I was aware research was being done in the area of nanoscale technologies – medicine, molecular nanotechnology, semi-conductors, etcetera, it never occurred to me that we'd made some real *progress*.

Carbon nanotubes. Fullerenes. Micro-injectors for machinery and medical applications. Books.

Yes, full-blown reference titles on nanotech. *Engines of Creation*, by Eric Drexler. *Prospects in Nanotechnology*, by Markus Krummenacker and James Lewis. *Nano- and Micro-electromechanical Systems*, by Sergey Lyshevski. All you could possibly want to read in your quest to understand the imperceptible.

Books are just the beginning. The Foresight Institute and the Centre for

Responsible Nanotechnology are just two US organisations set up to deal with the implications of this new branch of science on our society. And there are more.

All this work in the space of two decades – maybe less. It made me think about all I currently understood; all the glorious little facts I'd picked up during my lifetime, and I wondered just how many of my starlet brainy points were steaming piles of semi-malleable baloney. It had me stunned. Baloney does that.


Using the most accurate and readily available information source, I loaded up Google and tore into my brain. I unceremoniously disrobed my wisdom and intelligence, threw them into interrogation with nothing but their nakedness to contemplate, and commenced on digging up some dirt.

What did I discover? Apple seeds do have cyanide in them, as do the massive pips of peaches. Plastic bottles don't leach toxins (at least not in the short term, say, like my lifetime) if reused. Babies aren't delivered by storks, and you'll only go blind from masturbating if you get something in your eye.

What a relief – in general, of course.

Some stuff *was* news, but mostly my research concluded in reassurance of what I already knew. Like Lister, there was no need to question my Reketrebn/Kryten to find out the answers – I already had them.

However, the shock of being corrected on a considerable number of facts was still scary. But like seeing your mum and dad in the sack for the first time, you recover, if a little tainted by the experience. The major point is that being on the bleeding-edge doesn't necessarily mean 'the bleeding-edge'. Despite what you might have been lead to believe, way after high school, university and TAFE, you'll be learning new things about stuff you already thought you knew about; fiercely corrected on knowledge you thought was sound, and being brought back to Earth by specialists and experts, and the yet-to-be-thoroughly-explained force of gravity.

It's going to happen, so be prepared. 

Crouching Tiger Hidden Dragon

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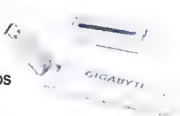
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GIGABYTE
TECHNOLOGY



In the balance

Why do games live or die on game balance? It's the key to their success and Logan Booker can't help but peek through the keyhole.

Like a uni professor with a night job as an adult performer, once you've stripped away the glitz, glamour and leather jacket with fabric patches, a game is just a disappointing bunch of mathematical calculations.

Nothing could possess the average gamer to sit down and stare at an Excel spreadsheet for hours on end, unless it was their job, in which case the promise of sweet, sweet money might just do it for them. This is exactly how most games are balanced; a single designer, or elite taskforce of SAS super-designers, will sit down and tweak values until they all level out. How they level out is up to the designer's desired outcome, input from players, and more than a little trial-and-error.

There are a number of ways to balance a game, with different methods applying to different genres. Adam Carpenter was a consultant for developers on massive-multiplayer online games before he started working for Auran as a games system designer. Carpenter wrote an article regarding the use of risk analysis in balancing games

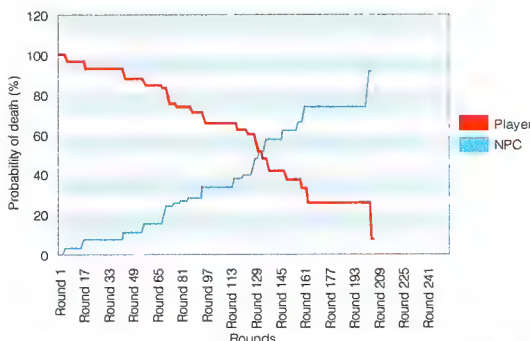
www.gamasutra.com/features/20030611/carpenter_01.shtml, and in it he detailed ways of using risk analysis techniques and software to assure that desired outcomes are achieved.

In the article, Carpenter mentions that one way of dealing with balance data is in a spreadsheet. Using formulas, a designer can instantly see – theoretically at least – the impact of a change in values. With the addition of special risk probability software, the designer can also see in a graphical way the effects of a change.

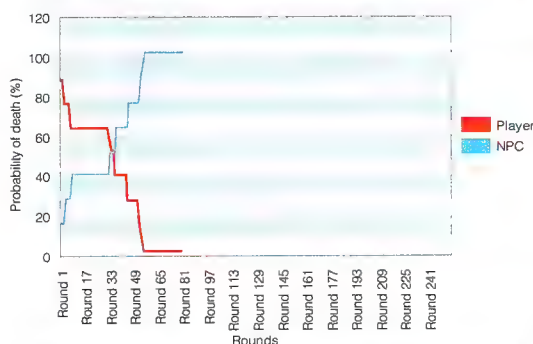
'Of course, a game created with only a spreadsheet and probability package would lack the meaning, context and emotion that an RPG brings to players,' Carpenter writes. This is why designers try to adhere to the original, planned outcomes and feedback from players to retain the desired flavour of the game. It's these elements, when not properly controlled, that lead to a loss of game balance.

So, how exactly do you represent probability of success and failure graphically, outside of the game itself? It's easily accomplished with confusing graphs, and the squiggly lines that accompany them. Once attributed a properly labelled and scaled set of x/y axes, the delicate beauty of a compiled probability graph is mesmerising. Unconvinced? Then check out the ones we prepared earlier.

Using information from Carpenter's article, we decided to set up our own probability spreadsheet. In the first sheet, we listed the statistics (strength, endurance, speed, etc) and derived statistics (health, attack strength, attack speed, etc) of the player and NPC. The second sheet was then prepared to receive data from a Visual Basic script. This script was responsible for randomly playing out 250 combat rounds, using the values from the first sheet, while calculating damage. The task was to tweak the values of the NPC and player, until they intersected roughly at the 125-round mark. This meant that in an ideal situation, the player had a 50/50 chance of emerging victorious.



ABOVE: A probability graph we whipped up in a few hours at Atomic HQ. Here, most of the values between the PC and NPC are equal.



ABOVE: For fun, we set the NPC strength to a ridiculous number. As you can see, the player's chance for survival takes a sharp nose-dive.



ShortCircuits

◀ We try to keep the news on game patches to a minimum, but when a 600MB update becomes available, it's hard not to pick it up on the scanners (or Scanner). What makes this particular patch unique is that it's for the Battlefield 1942 mod, Desert Combat. The CD-ROM's worth of data will update DC to version 0.7, and apparently fixes a bunch of bugs, adds some optimisations and balances out a few of the units. This one's strictly for broadband users, and maybe over-confident people on dial-up.



◀ JoWood, a less-than-high profile game developer based in Austria, managed to sneak the news that it has the rights to the Stargate SG-1 TV series into its latest financial report (www.jowood.com/investor/?lang=). The report went on to say that the developer planned to release a title based on the licence by 2005.

According to the report, a recent restructuring of the company was responsible for increased profits, with earnings of €48 million (\$79 million) – even though this is actually €4 million less than the previous year's takings.



BUZZWORDIAN

Risk analysis

Although it seems like a clunky and out-of-place term to use in regards to game balance, risk analysis is perfectly appropriate as it describes the process of checking a system for generated outcomes that conflict with those that are needed. It's a great way for creating percentage-based, variable victory/defeat conditions, rather than static, predetermined ones.



Obviously, if the player was low level, you'd want victory to be assured sooner (more combat rounds), and defeat to have more chance of occurring at higher levels (less combat rounds). By making combat more hazardous when using raw statistics, you guarantee that the player will need to make use of their special abilities to emerge as victor; be they spells, combat feats or their pistol that they can fire free each round. Carpenter recommends a designer should assume 'that all abilities styles [or abilities] are used at the most opportune of times... Players will have a specific goal to strive for: the ideal use of their character's abilities.'

As mentioned earlier, game balance is more than just numbers and algorithms. While probability is an excellent way to make sure things work as intended, Carpenter brings up the point that designers must also think how players might play the game as it wasn't intended.

To illustrate his point, Carpenter puts forward the three basic roles found in almost any role-playing game or strategy title – the tanks or meat; the healers; and the nukers.

If a type of unit or character class filtered into these categories isn't used as the designers intended (an artillery piece, or nuker, is used as a front-line unit; or a tank unit is kept back for support), it could have two results. Either the player will be frustrated that their character or side is weak, or, will be pleased that the character/side is strangely effective.

It was Sun Tzu who said 'He will win who knows how to handle both superior and inferior forces.' A lot of the time, players don't want to take the time to come to grips with an apparently 'weaker' side, even if after some practise they turn out to be powerful when properly used. Depending on the depth of gameplay, gamers using a side that is too strong may simply consider it balanced. This results in players switching sides as updates are released to fix balance problems. The best examples of games affected by this 'syndrome' are Sony's PlanetSide and Blizzard's Warcraft III. In fact, the problem is so prolific in games today, that most players will naturally choose the strongest and easiest-to-use side. It's a hard problem to overcome. A conclusion we can draw from this is that a designer must keep in mind the ultimate objective of the game they are designing; an FPS that predominately has players killing each other will give characters with a combat bent a natural advantage, while an RTS that rewards economical strength will side with whatever race has the strongest range of related research technologies.

Risk analysis is just one way of getting games balanced. The other method is trial-and-error, where a designer will simply tweak values on the fly and infer imbalances from the results to achieve good gameplay.

This method favours smaller projects over larger ones, and might be better used for an RTS, rather than a massively-multiplayer game.

Lead designer at Ethermoon Entertainment, Tom Cadwell, wrote *Techniques for Achieving Play Balance* (www.gamedev.net/reference/articles/article1765.asp). Poor Tom works for Blizzard Entertainment now, but that doesn't stop us from examining his article.

Easily the most standout premise Cadwell mentions is that 'nearly all situations commonly referred to as imbalances can be boiled down to a choice reduction.' What this means is that anything that convinces the player to use one unit or class over another in the majority of circumstances is an imbalance – a reduction in the available choices, even if those choices are actually available. In his article, Cadwell focuses on the types of imbalances in games, rather than the techniques that can be used to overcome them.

One type of imbalance that is hardly considered on the part of the gamer is that of the player's time. 'Most play balance comparisons are based on the cost of various choices in terms of what the player must give up to choose a particular path. It is very easy to overlook the fact that a player must spend



ABOVE: Warcraft 3's Blood Mage hero cutting loose with Flame Strike. Many players believe it's poorly balanced compared to the Archmage's Blizzard ability.

time *executing* the choice.' Cadwell goes on to mention that this is a problem found mainly in realtime strategies and role-playing games, and isn't really a variable in anything turn-based. Basically, if you're building a unit in Red Alert, or crafting a new weapon in Ultima Online, there's a time factor involved that goes beyond the game – you're burning the player's time. This 'resource', if abused, can lead to imbalances in unit strength/cost/time, not to mention being a major inducer of player boredom. Cadwell's view on game balance is one of simplicity – the simpler a system can be, the better. He also believes in 'microcalibration', which is the tweaking of play systems once a method such as risk analysis is used. Microcalibration involves making, if possible, singular changes that are minor in impact. While slow, Cadwell suggests it's the best way to iron out recurrent balance issues.

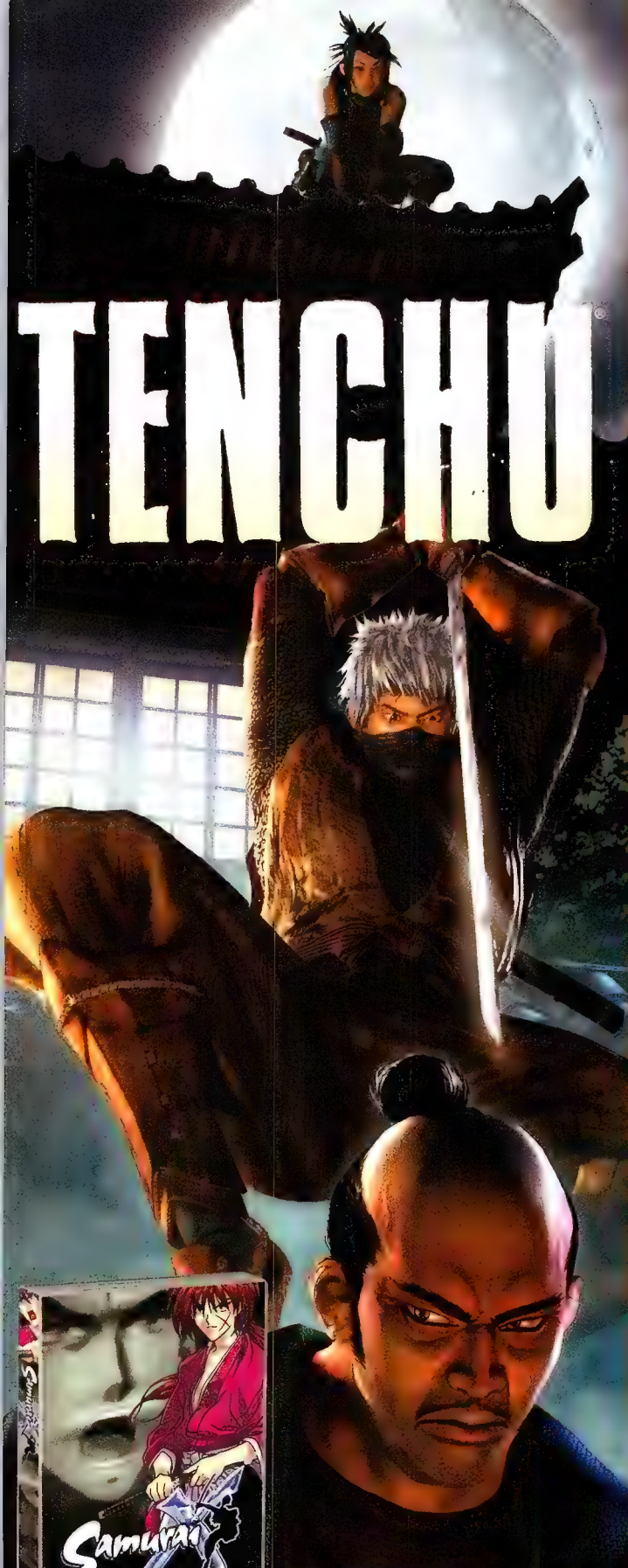
No matter the design philosophy, an eternal war rages on the battlefield of game balance – a designer must not only fight with the desired outcomes, but also player input. In the end, it's up to the developer to decide how imbalances must be remedied, and you can be confident it doesn't involve nudged-up college professors looking to make some extra cash.



Developer Quote of the Month

'I guess the trick is denying yourself ambition (which seems to find its way to you, regrettably), and to just make shit for the sake of making it. Not because you think it'll be big, not because it's "what you're doing next", but rather, because it's interesting.'

Justin Frankel, latest plan after his recent break-up with AOL, 3/2/2004.



*When
evil reemerges,
so must those
who silence it.*

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ACTIVISION
activision.com

The Engine Room

The Source: HALF-LIFE 2

How did Valve develop a DirectX 9.0 class engine at a time when the Voodoo 2 was the fastest card? James Wang finds out.

Half-Life 2 is probably the best kept secret in gaming history. For almost five years, development on the sequel to the 'No. 1 First Person Shooter of all time' was carried forth in the uttermost secrecy. When it was first shown last year, the first thought that went through people's minds was, 'what engine is this?!' The Source engine proved to be a most surprising answer.

Source is the name of Valve's homebred DirectX 9.0 engine for Half-Life 2. Initial work on the engine began as early as January 1999, just as the first Half-Life was shipping. To put this into perspective, in 1999, the fastest video card had an earth-shattering fillrate of 90 megapixels. The feature set revolved around multi-texturing and alpha blending. Colour was still limited at 16-bits. Jump to today, a common DirectX 9.0 card like the RADEON 9700 has a fillrate of 2,600 megapixels and features 96-bit internal colour, fully programmable shaders and four geometry processors. How does one design an engine to keep up with such an astonishing rate of change?

Pixel pioneers

The Source engine was developed to be highly scalable and modular in nature. In the early phase of development, a list of potential technologies to be used was drawn up and research in the special areas began in parallel. Knowing that their game wouldn't be shipping for around four years, the developers of Half-Life talked to the key hardware experts at 3dfx, ATI and NVIDIA. Pixel shading was the synonymous answer. Different people at Valve were

dedicated to researching in-depth in their particular fields while still working around a common code base. Gary McTaggart, senior software engineer at Valve gave us the rundown: 'Jay Stelly spent a ton of time on physics this time around, whereas during the development of Half-Life 1, he handled renderer enhancements, AI, save/load, level transitions, beam-effects, decals, and a lot more. I spent almost all of my time on rendering technology for Half-Life 2, which wouldn't have happened during the Half-Life 1 timeframe.'

Animation also proved to be a key aspect, 'during Half-Life 1 development, Ken Birdwell did just enough "acting" technology to find out that it's a pretty interesting path for us to follow for Half-Life 2. This time around, he has spent most of his time in this area. We all have to retain some sense of generality with the code base. And we rely on each other a lot to make the right decisions, which makes for a fun work environment.'

The scale and complexity of Half-Life 2 is startling. To facilitate the vast outdoor environment, the Source engine and

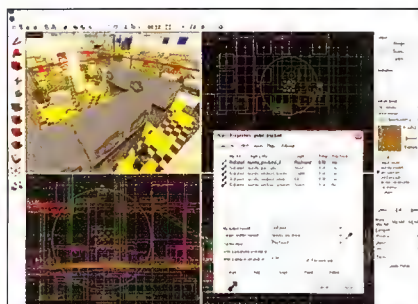


ABOVE: The first shots of Half-Life 2 focused on the engine's realism.

Hammer editor as well as all the tools have been completely revamped. Just speaking of map size – the volume of a map in Half-Life 2 is up to 64 times larger than the original. The texture library was expanded to incorporate a shader library with consistent physical attributes linked to the new material system. The content creation (modelling, textures and animation) aspect is now taken care of by XSI's *Softimage*, which, thanks to its intuitive interface and workflow, has gained enormous popularity in both offline and interactive rendering. When the game ships, exporters for Maya and 3dsmax will also be made available.

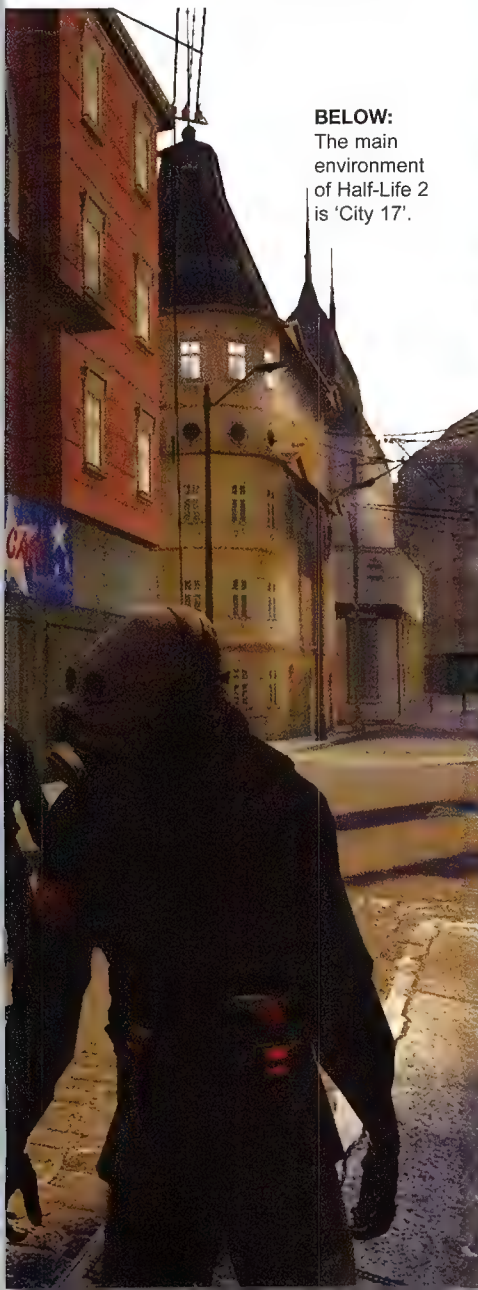
Multiple lighting systems

Half-Life 2, much like S.T.A.L.K.E.R., has two lighting systems – one for static and one for moving objects. 'We use a unique combination of radiosity lighting and normal maps for diffuse lighting on all of our different geometry types, including the world, all prop types, displacement mapped geometry monsters, NPCs, etc.' says McTaggart. Static lighting applies to world geometry and inanimate objects, both of which are lit using pre-computed radiosity lightmaps. (This method is fairly common today, used in the Quake and Max Payne series of games.) On top of all this, dynamic lighting is overlaid, with shadows generated using projection shadow maps. Where Half-Life 2 really shines are its sophisticated shaders. Whereas Doom 3 for the sake of lighting consistency uses a generalised lighting algorithm on everything, the Source engine uses separate shaders to describe different materials. Because many materials (water, fire, organic tissue) have complex properties that a single unified shader can't describe, Doom leaves everything looking similar and what some people call 'plasticity' while Half-Life 2 looks more varied and lifelike.



ABOVE: Back in the day, Valve's Hammer map editor was known as 'Worldcraft'.

If shaders in other games look 'cool', then the shaders in Half-Life 2 are beautiful. The one shader that will go down as the hallmark of Half-Life 2 is the water shader. The equations describing in detail the nature of a fluid-light interaction were first discovered in the 18th century by the French physicist Augustine Fresnel. Fast forward a few hundred years and you find these equations in the Renderman shading language. Move to today and you find them in Half-Life 2, amazing no? Fresnel shaders take into account the distance between the player and water as well as the angle at which you view the surface. Sharper angles and closer distance reveal more transparency while further away at a shallow angle displays more reflection. DirectX 8.0 level hardware is the minimum requirement if you want to see them in action.



BELOW:
The main
environment
of Half-Life 2
is 'City 17'.

In today's games, internal lighting calculations are limited between the [0, 1] range. Because of the way 3D engines work, pixels are constantly dimmed down as they move down the pipeline and lose much of their fidelity by the time they are represented onscreen; parts of the scene that should be dim end up pitch black and areas which should be piercing with light are just semi bright. With the launch of the RADEON 9700 series, ATI and Valve worked together on putting high dynamic range rendering into Half-Life 2. According to McTaggart, Half-Life 2's luminosity range is 16 times greater at [0, 16]. Where this greatly increases fidelity is natural light and areas with a high reflectance. Water, metal and external



ABOVE: A realistic environment wouldn't be complete without realistic enemies – realistic in the graphics, physics and AI department.

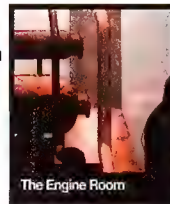
light sources are almost pure white at their peaks with the added range. A DirectX 9.0 exclusive feature, this gives Half-Life 2's indoor and outdoor areas a distinct difference in light representation, something that less than a handful of games can claim.

Polishing the blur

Pretty much all 3D games suffer from the blurry texture syndrome. It is one of the most painful reminders that we are merely walking around bitmap-filled polygons rather than a real world. To make sure flat surfaces – like walls and basic game entities – have fidelity, mapping techniques are used to add detail. Normal mapping is a technique that's becoming very popular. The normal map is a texture map carrying geometry information extracted from a very high polygon model. McTaggart explains: 'all artwork, be it characters or textures, are kept at the highest resolutions. Original full polygon models are kept so high that even the fastest cards today can't run them.' What these models are really used for, though, is to generate these normal maps.

For example, the original model may have a million polygons with details down to the nuts and bolts. The artist runs this character through a normal mapping tool, spitting out a bunch of textures and a 2000 polygon model for in-game use. When you play the game, the Source engine lights the reduced model using the vector information in the normal maps, reproducing the nuts and bolts not as geometry but as dynamically lit textures.

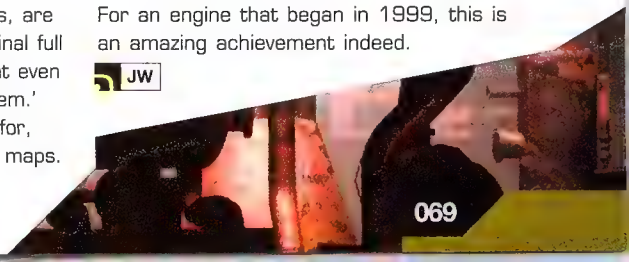
Although normal maps are very good at faking details, they doesn't produce any real geometry. For the outdoor areas and terrain, you need actual polygons. This is



where displacement mapping comes in. Hardware support for displacement maps are inconsistent and not part of DirectX so the Source engine computes all tessellation and displacement mapping in software mode via the CPU. Unlike standard displacement maps which only allow you to perturb vertices in one direction, the implementation in Source allows total 3D control. In essence it allows you to displace on displacement maps if needed.

More than just a technical marvel, Source is a beautiful engine. Although a lot of the buzz-word technologies (normal maps, soft shadows, volumetric effects etc.) are found in other shipping games, none of them carry the same finesse and artistic detail as what Valve has done. What really separates Source from the rest is the superb Fresnel shader and high dynamic range rendering. For an engine that began in 1999, this is an amazing achievement indeed.

JW





NFL Street

David Kidd slaps his pigskin around, Yankee style!


Developer:

Tiburon
www.tiburon.com

Publisher:

EA Sports
www.easports.com

Distributor:

EA Games
www.electronic-arts.com.au

Phone:

EA Games
(02) 9264 8999

☺ Fast, fun and grunty.

☹ Single-player loses its edge too quickly.



'I love men! Damn, did I really say that out loud?'

NFL Street is EA's spinoff of its successful NBA Street series, dragging America's most popular sports through the gutter. You won't see pads, helmets or rules but you can bet that the half-time entertainment delivers more than Janet Jackson's half-arsed attempt to get her nipple on national television.

It's firmly rooted in arcade-style gameplay with a limited selection of offensive and defensive plays. Games aren't played on fields but in arenas that are marked out by common landmarks – beaches, trees, roads etc. Like NBA Street, it has a funky,

fast pace and, thankfully, doesn't take itself too seriously. Unfortunately, where the hip-hop vibe fits perfectly with basketball (which has always been 'street'), it doesn't quite fit with football, giving a hollow, try-hard impression.

Games are played by a series of challenges, which are linked to a championship ladder. The challenges are fun and involve quickly meeting specific goals like scoring before your opponent or TD-ing off a pass. The fun factor dissolves quickly as you become more skilled and you'll be soon be able to easily beat most challenges. Multiplayer, on the other hand, is where it's at and even though offence is far more fun, it's combination of strategy and action is addictive.

Graphics are smooth in a cartoonish way, although the player models could do with a slightly higher polygon count. The trick animations work well and, aside from some dodgy collision detection, tackles are grunty and punchy. The pumping hip-hop and rock soundtrack keeps the game trucking along, but the trash talking

voice overs are too wanky to take seriously and not funny enough to laugh at.

The coolest part of NFL Street is the Gamebreaker and, though not as funky as its NBA predecessor, you can't live without it. The Gamebreaker meter fills up as you pull off moves in the game and when it gets maxed out, so do you – for a brief time you can run rings around your opponent like a crazy monkey. It's a simple feature, but it adds dramatically to the arcade flavour.

Overall, it's a great blast once you ditch the AI for a human opponent. It's still lacking the polish of NBA Street, but EA has laid down the foundations for a killer series.

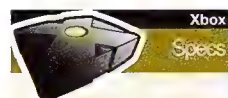
DK

SCORE

8/10

Armed and Dangerous

John Gillooly laughs a little then blows stuff up.


Developer:

Planet Moon Studios
www.planetmoon.com

Publisher:

LucasArts
www.lucasarts.com

Distributor:

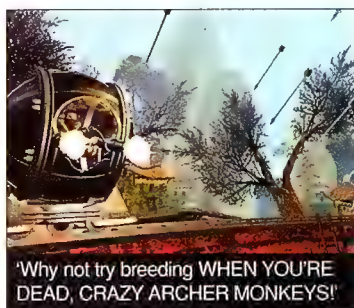
EA Games
www.electronic-arts.com.au

Phone:

EA Games
(02) 9264 8999

☺ Funny, fast and furious.

☹ Repetitive at times.



'Why not try breeding WHEN YOU'RE DEAD, CRAZY ARCHER MONKEYS!'

Armed and Dangerous has the best weapon in any game, ever. It is called the Shark Gun, and it really has to be seen to be believed. Firing it launches a shark fin that tracks enemies, at which point a Jaws-sized white pointer launches from the ground, munching down. It's hilarious and ingenious, indicative of just how fresh Armed and Dangerous (A&D) is.

Coming from the same lunatics that made Giants: Citizen Kabuto, A&D is an epic action romp.

You play the leader of the Lionhearts, a very British crew of space criminals. Your mission is to complete the heist of the Book of Rule, a tome imbued with all sorts of nasty powers. And your tactics? Blow the living crap out of anything that moves, and some things that don't.

Mayhem best describes the gameplay of A&D as you churn through hordes of bad guys. After most levels the obligatory kill tally numbers in the multiple hundreds, and on the way you also mince buildings, sheep, penguins and anything else protruding from the ground.

On the downside, there is not a huge variation to the game – either mince enemies while running around, or else really cause some carnage in a base defence turret.

Underlying all of this is a story laced with an actual sense of humour, something we though publisher LucasArts had forgotten

about entirely. It's rare that you laugh out loud at a game, but both the cut scenes and the incidental quips are nicely tinged with humour.

What lets A&D down is a lack of variety. While there are heaps of missions, the actual gameplay doesn't vary much. After a while mowing down dozens of baddies, and the buildings they occupy gets annoying. Snipers too can be nasty at times.

It's so refreshing to have a funny, fast game again. Too much attention is given to stealth in gaming these days, and nowhere near enough given to mass carnage. For those just itching to blow shit up, A&D is the best weapon to do it with in a long time.

JG

SCORE

8/10



Final Fantasy X-2

David Kidd likes short-shorts and Final Fantasy. Thank-you Square Enix.



Developer:
Square Enix
www.squaresoft.com

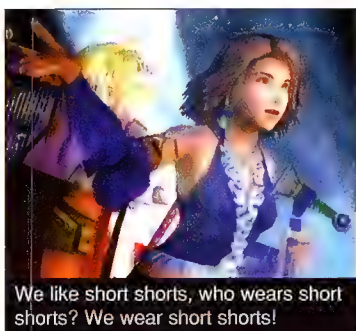
Publisher:
Square Enix
www.squaresoft.com

Distributor:
EA Games
www.electronic-arts.com.au

Phone:
EA Games
(02) 9264 8999

It's Final Fantasy with three foxy girls that giggle, jiggle and dance like fairies.

Boring storyline; too happy for a FF game.



Final Fantasy fans have cried out for a true sequel for years, and Square Enix has listened. Unfortunately, it listened to the wrong people and ripped out many of the reasons why people love Final Fantasy games. That's not to say it's a bad game, but rather that it doesn't quite reach the heights of its predecessors.

FFX-2 once again takes place in the land of Spira, with Yuna having grown straight into a pair of hot pants. In itself, this caused controversy among fans who preferred Yuna's modest innocence,

but come on. She's a fox, she's grown up and she's starting to notice boys so, really, the folks who have problems with it clearly don't understand the deeper significance of painted-on short-shorts. It might also have something to do with the game's underlying themes about change and growth or something. We didn't notice it though 'cause we were staring at her arse the whole time.

Yuna's joined by cute Rikku and angry goth girl, Paine. The trio form the core of the Gullwings as they travel around Spira hunting for spheres and searching for answers to the mysterious video of a boy, who looks a lot like Tidus from FFX. In an unusual twist you're given free roam of the game's locations practically from the start, which leaves most of the plot progression in your own hands. This freeform design gives the game a strict mission structure, where the game only progresses if you want it



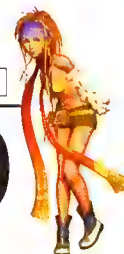
to, but weakens the urgency and overall character involvement.

In the end, this is still Final Fantasy. The combat system has been tweaked, and character abilities are built up through a unique 'dressphere' system, but despite these changes, it's a classic, lovable and familiar entry into the series. It's not perfect, but we can gladly overlook the happy vibe and weak storyline for the chance to play more true sequels to our favourite FF games. Well, maybe just this once.

DK

SCORE

8/10



Wallace and Gromit in Project Zoo

Darren Ellis grips his joystick hard and polishes off the penguin.



Developer:
Bam! Entertainment
www.bam4fun.com

Publisher:
Acclaim
www.acclaimau.com

Distributor:
Acclaim
www.acclaimau.com

Phone:
Acclaim
(03) 9674 5900

Classic Wallace and Gromit action; good 3D level design.

Simplistic gameplay.



While it's been years since Wallace and Gromit were last seen in *A Close Shave* and while we're still years away from the Wallace and Gromit movie (*Wallace and Gromit and the case of the Were-Rabbit*) you can still slake your thirst for Aardman Animation's claymation creations with Project Zoo, a highly colourful third-person platform puzzler from Bam! Entertainment.

You play as Gromit, arguably the more intelligent of the pair,

as you uncover a dastardly plan by Feathers McGraw the world's most evil penguin to create lots and lots of diamonds. To do this Feathers enslaves baby animals at the zoo which forces their parents to work slavishly for him. As Gromit, it's your job to run, jump, swing and fight your way around some complex level designs to free the babies, emancipate the animals and gradually progress through the zoo towards Feathers.

Being a console port, the game is definitely for those that have joysticks or gamepads as the control system is absolutely horrendous via keyboard and mouse. Graphically the game is great, though there are some camera bugs as the camera swings around Gromit. The sounds, level and character designs and animations all have that particular Aardman bent which means it's great for the fans of Aardman Animation's

work, but possibly too simplistic for newcomers to their oeuvre. There are heaps of extras in the game though, including bonus levels, Easter eggs, unlockable *Wallace and Gromit* movie clips and more. The gameplay does tend towards the repetitive after a while so it's good to have these small incentives to keep on going.

All up, it's a decent enough diversion and has plenty for fans of the short films, but it's not great as a standalone game for those that aren't fans.

DE



SCORE

6/10



There are some free wireless internet 'hotspots' in Australia, where you don't need to set up an account to use the network, but the word 'free' should really be in quotation marks for most of them. They generally service places like pubs and cafés where you're expected to buy stuff while you surf.

There's also free access in places that're even more expensive to be in – luxury hotels, Qantas Club lounges and such – but that's probably of even less interest to you.

There's been a bit of a dot-com-ish bubble associated with this; people with the following business model:

- (1) Set up free hot-spot
- (2) ???
- (3) Profit!

...who are now realising that free wireless in your café is much more likely to attract a few nerds who'll nurse one cup of coffee for an hour while they play Counter-Strike, or browse Hungarian rabbit porn, or otherwise scare away the normals. It's hard enough for companies to make money from wireless internet access when they *charge* for it, let alone when they don't.

Assuming you know somewhere that *has* an unrestricted wireless network (on purpose, or accidentally. . .), it's generally possible to connect to it from outside the area it's meant to serve. You'll probably need a directional antenna to do this.

If you're not comfortable with the idea of juggling a laptop and a chunky antenna in your parked car, though, you're unlikely to find this very practical.

On the plus side, the 802.11b hardware needed to connect to a wireless LAN (or create your own) is now very affordable. Decent off-brand PCMCIA and PCI 802.11b cards can now be had for around \$100.

Car: free. Tyres: \$100,000.

About 15 months ago I was given a Panasonic CF-35RJ8CAM laptop computer, for which all I needed was a power supply to get it up and running. Panasonic Australia referred me to its spare parts distributor in Parramatta, but all it said was that you can't buy that particular part in Australia.

I emailed Panasonic USA about buying the power supply, including the part number I found on its website, and got no response. It doesn't ship outside the US, anyway.

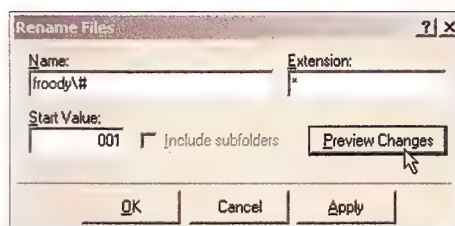
Please help me. I have no one else to turn to!

Darren Murphy

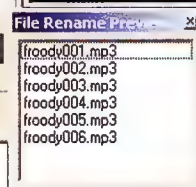
I've banged my head on a few Panasonic support pages now, and given up – would it kill them to let you search for a model number and then download a spec-sheet PDF file?

Anyway, what you need to know is the voltage and current rating of the AC adaptor, if it's the usual simple DC type with a two-terminal barrel plug on the end. With any luck, the power adaptor specs will be in the manual and/or stamped on the back of the laptop, and you can of course just look at the socket to see what kind of connector it uses.

If it's some weird multi-terminal job then you're probably out of luck, but if it's a normal laptop power adaptor outputting something between 15 and 20 volts DC, with a barrel plug, then you can buy a generic replacement. Jaycar Electronics (www.jaycar.com.au) have them.



BELOW: If it ain't got regular expressions, it ain't renaming.



ren osmonds*.mp3 metallica*.mp3

Is there any way to get Windows XP to automatically rename a bunch of files in consecutive order? I tried selecting a heap of them and giving them the same filename and the result was:

File (1), File (2), File (3), . . .

Whereas I would prefer something like:

File1, File2, File3, . . .

Any help would be appreciated.

Alex Wong

I don't think you can bludgeon XP into doing this natively, but there are a number of file-renaming utilities out there that'll do what you want.

A good freeware option, which puts flexible file-renaming and several other features into the standard right click menu, is rjhExtensions: www.rjhsoftware.com/rjhextensions.

Wired to wireless

I'm moving to a new place soon and will be getting ADSL (256Kb/s) at the new place.

The problem is that, will I still get the same speed (100KB/s download average) and ping (sub-100 milliseconds) on a wireless network (802.11b – maybe 802.11g later) as on a corded network?

William Schindler

Yes, provided you've got a good signal, and you're not sharing the one access point with a bunch of other users. 802.11-whatever that's trying to deal with marginal reception or lots of users can give quite woeful performance, but in normal situations you should have plenty of bandwidth.

Crunchalicious!

Is it just me, or are the MPEG artefacts on some live digital broadcasts, like the cricket on Channel 9, really bad? I don't get why they should be so bad – surely they could invest in a nice realtime MPEG encoder?

Bennett Foddy

If a TV image is constantly full of compression artefacts, that's probably because it's had to be squished down to fit through a pretty narrow pipe as it's bounced around. Perhaps it doesn't always need to be that small, but they don't know when they might lose bandwidth or have to switch to a backup pipe, and have thus set their bit rate to a rate that'll always work.

If the image goes to Lego only now and then, then it's just a transient error. Small glitches are often much more noticeable on digital signals than analog ones.

'Tweak-ers. Everybody needs good tweak-ers. Just a little OS hacking, but better back-up, just in caaaaase...' (Simon Peppercorn sings rather badly to the tune of Neighbours.)

Modifying your boot screens

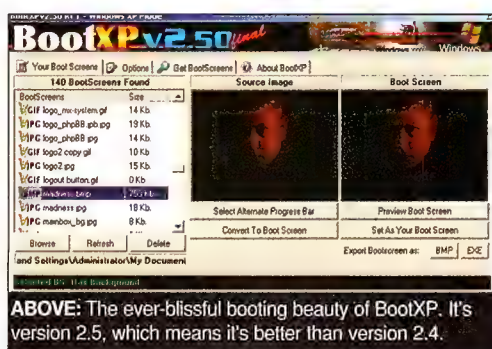
In earlier versions of Windows, the boot screens were simply bitmap images saved with a particular filename. This made the creation of your own boot screens a rather simple affair. Windows XP, however, cleverly hides those images deep within the kernel. They are embedded in the ntoskrnl.exe file, to be accurate, and are a pain in the arse to fiddle with. Worse, doing this manually presents a strong risk of making your system unbootable.

Fortunately there is a proggy which can be downloaded from www.bootxp.net which makes this process safer, has a recovery process if it all goes wrong, and allows for greater control over the boot image loading process. Please note that the utility is not freeware, so if you intend to use it then be a sport and register it.

Your first step is to find or create the image you want to use. There are no requirements in terms of size or colour depth, as BootXP will make the necessary adjustments. Your source file can be in GIF, JPG, PNG, PCX, TGA or TIF formats but be aware that the final image will be converted to a 640 x 480 BMP in a whole 16 glorious colours.

The results aren't as bad as you may expect. A lot can be done with 16 colours. Even my own mugshot came up every bit as horrid as it was in 32-bit colour.

In the left pane, browse to the folder which contains your source images, and then select the relevant file. Hit the button to convert the image to a boot screen, and then hit the preview button to check the results. If required, you can reposition the progress bar from here. When you're done, close the preview window and if you are happy with the results, set it as your boot screen. It's as simple as that.



ABOVE: The ever-blissful booting beauty of BootXP. It's version 2.5, which means it's better than version 2.4.

One really handy feature of this program, is it will extract images from other files. For example, at www.themexp.org, many replacement ntoskrnl files can be downloaded, containing complete themes for XP. However, you may just want the images embedded within those files not all the other bits and pieces. BootXP will allow you to extract those images individually, including the customised progress bars, if you wish. Yay!!

Windows 2000 users don't despair. There is a way of changing your boot screens as well, although it's a more tedious process. Full details can be found here: www.littlewhitedog.com/modules.php?name=Content&pa=showpage&pid=9. It involves a utility we used in Phr33x Tw33x to edit the Start button, called 'Resource Hacker' which allows direct editing of the ntoskrnl file and requires some changes to the boot.ini file. It's not difficult, just fiddly. Certainly worth having a crack at, though.

There are thousands of pre-made boot screens to be found with a little trawling around the internet, but let's get creative, boys and girls. How about we see some original Atomic themed boot screens. Email your work to windowstweaks@atomicmpc.com.au and the really special ones will be put on the Atomic website for others to gawk at, or use themselves.

Un-jamming the un-jammable

From time to time a print job decides it's going to hang, and nothing you can do will see it drop off the print queue. It sits there taunting you, not printing, not allowing other print jobs to pass it and not bugging off when you try to delete it. Nothing short of a restart seems to shift the bloody thing. Except this: under Control Panel | Administrative Tools | Services just stop the 'Print Spooler' service. Then, start the service again and you should find that, after refreshing your print queue, either the recalcitrant print job can be deleted, or it has already vanished without a trace. Brill!

Never fear GLOBE is here :)

You know when you're playing around with AVI files, that sometimes if the file is corrupted or Windows just wants to play silly buggers, and you can end up with a PC that hangs like a one armed man off a cliff? When you do a check in Task Manager | Processes, you find that Explorer is at 100 percent CPU usage and hangs there forever. The only way to fix this stupid problem is a system reboot.

Fire up regedit, and browse to
HKEY_CLASSES_ROOT\SystemFileAssociations\avi\shell\PropertyHandler

Delete the 'Default' value which should be:
(87D62D94-71B3-4b9a-9489-5FE6850DC73E).

Love always,
GLOBE xxx





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Conditional execution

With conditional execution you can build very powerful and flexible commands. The two conditional operators `&&` and `||` can be used to link commands together and have them execute depending on the exit status of the preceding actions. `&&` works like a logical 'and', so if you group two commands like so: `cp work.txt work-dir/ && ls -l work-dir/`, the second command will only execute if the first one succeeds.

`||` on the other hand is a logical 'or'. So, a command: `cp work.txt work-dir || echo "copy failed"` will only print the error message if the copy fails.

Now you can build complex and effective commands such as this one, in Bash, which adds the current directory to the path if it is not already in it: `echo "Modifying Path" && echo $PATH | grep `echo pwd` || PATH=$PATH:pwd`

Notice the backquotes around "echo pwd" and "pwd".

Shopt

Shopt stands for Shell Options and it is an inbuilt Bash command that lets users manipulate various shell settings. To enable a desirable option, shopt must be called with an `-s` flag, eg: `shopt -s cdspell`, to disable the `-u` flag must be used instead. Here is a list of some options you can enable with this command:

`cdable_vars` – if you try to `cd` to a directory which doesn't exist but there is a variable under that name, the value of the variable is assumed to be the name of the directory. Default: Off.

`cdspell` – if you misspell a directory name when using `cd`, Bash will automatically select the closest directory to that name and change to it. Default: Off.

`cmdhist` – Bash will save commands that take multiple lines into the same history entry. Default: On.

`interactive_comments` – if this option is set any words you type after the hash (`#`) character will be ignored by Bash. Default: On.

Have a look at www.ss64.com/bash/shopt.html for a list of all available options.

You can enable shopt commands interactively or edit the `.bashrc` file in your home directory and append them to the end.

Process status reports

To continuously monitor, in realtime, the CPU usage by different processes, `top` is a blessing. If you want to look at a certain process (given by PID), run for 10 iterations and have the display update every two seconds, use the following `top` command: `top -p 1055 -n 10 -d 2`. Yet, if you only need a snapshot of the current activity the `ps` command is probably a better option. For instance, to take a snapshot of all current processes including their CPU and memory usage, as well as their session ids run this command: `ps -u $USER -o pid,%cpu,%mem,session,cmd`

Important information

Linux has a great utility called `ifconfig` (`/sbin/ifconfig`) that has two purposes. It can be used to configure network interfaces and provide relevant network information. The following script uses `ifconfig` and a few other built-in variables to give you the most frequently used data such as your IP address, hostname, mac, current time and uptime. While this information is simple to find on its own this script consolidates everything into one easy-to-read summary.

```
#!/bin/bash
green='\E[32;47m'
blue='\E[34;47m'
default='\put sgr0'

IP_ADDR=$(/sbin/ifconfig | awk '/inet addr/ {print $2}')
BRD_ADDR=$(/sbin/ifconfig | awk '/Bcast/ {print $3}')
MAC_ADDR=$(/sbin/ifconfig | awk '/HWaddr/ {print $5}')
UPTIME=$(uptime | awk '/up / {print $3}')
CURRENT_TIME=$(uptime | awk '/up / {print $1}')

echo -e "$green Current Time: "
echo -e "$blue $CURRENT_TIME $default"

echo -e "$green IP Address: "
echo -e "$blue $IP_ADDR $default"

echo -e "$green Broadcast Address: "
echo -e "$blue $BRD_ADDR $default"

echo -e "$green MAC: "
echo -e "$blue $MAC_ADDR $default"

echo -e "$green Hostname: $blue $HOSTNAME"
echo -e "$green Uptime: $blue $UPTIME"
echo -e "$green User: $blue $USER $default"
```




The main components were sourced from PC Case Gear (www.pccasegear.com) and Silverprop (www.silverprop.com) but be sure to check your favourite reseller as well. Some of the \$RRP are approximate figures as pricing is yet to be finalised.

Components:

- DIGN 4E HTPC Case – Aluminium, ATX form factor, \$440.00
- Swiftech MCP600 water pump – 12V DC, 600L/h, \$149.00
- WaterCool reservoir – high capacity, \$25.00
- Meteor LED Lights – 30cm, blue, \$29.95
- Aluminium fan guard / filter – silver, \$12.50
- 80 – 120 fan adaptor – clear, UV reactive, \$15.00
- LED case feet kit, \$19.50
- Siliceous (silicon) sheeting – ATX PSU, fans, washers, \$21.00
- SilverStorm80 radiator – prototype, available March, \$150.00

Tools:

- Jigsaw
- Dremel
- Drill and bits
- Sandpaper
- Sheet metal
- Glass
- Silicon
- Spray paint
- Assorted screws and nuts

The Couch Potato Project – Part 1

Gather around the modfire, as we begin a 4-part epic journey to create god's own media centre PC.

Ron Prouse parts the waters...

For several years I have had a 'pet' hate – the term, 'multimedia PC'.

It is one of those labels that advertising gurus love to use, but what does it really mean? To the uneducated buyer, the message is that all a PC requires is a DVD-ROM and a cheap pair of speakers to magically transform it into an all-encompassing entertainment centre.

Obviously my definition of multimedia is way out of step with theirs'. My fantasy PC entertainment unit would play CD / DVD / MP3 / DivX / and games at decent framerates with excellent surround audio. I would be able to watch and time-shift TV shows, download DV, display picture shows, and burn to CD / DVD.

My multimedia PC would surf the net, synch my PDA, check email and become the central integrating device – the 'heart' – of my home entertainment experience.

Digital convergence would own my life.

Well, the time has come to turn the fantasy into a reality. This project is about taking the knowledge and skills that we have in case-modding, water-cooling and multimedia applications, and packaging it into a one-stop box that looks at home amongst the other components in the entertainment unit – dragging the PC out of the study / bedroom and into the living room. The box will be modded to show off what it really is, but it will also be subtle and silent of course.

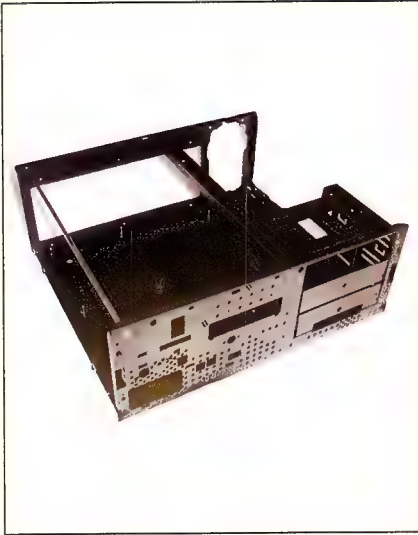
The first decision is the most important, the style of case that it will be housed in. I chose to use a 'desktop'-style configuration, rather than one of the recent avalanche of small form factor (SFF) cases, for several reasons. First, they are simply too small to house everything, especially a serious water cooling system. Second, they look nothing like the rest of my DIN-sized sound system components, and third... well, I am just really 'over' them! My final reason was the consideration that this uses an ATX format, accessible to everyone's budget. Sure, the case that I am using is a high quality DIGN home-theatre case, specially made for this application, but the chassis itself is not that different from the 'garden variety' desktop that many of you would already have, stashed away somewhere collecting dust.

Realistically, all that it would need is a coat of satin black paint and it is ready to be reborn. Similarly, depending on how much gaming performance is required, the actual internal components can be of modest specification. So, to use a popular business phrase, this is a 'scalable project mechanism that can be budgeted to meet your present available spend, with the possibility of future upgrade'.

Which means, whatever floats your boat.

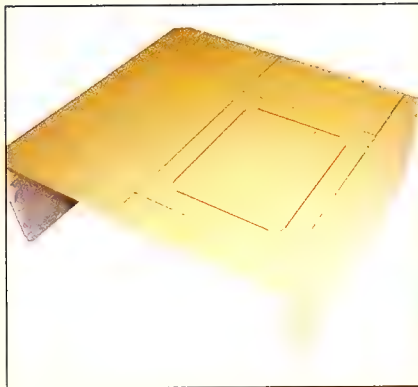
DISCLAIMER:

Power-tools, sharp objects and aerosol paints can be dangerous to your current state of wellbeing, so take care and follow all of the relevant safety precautions. Especially eye protection. This project may also contain a potential hidden danger, *fiscal degradation*, so observe 'wallet safety' at all times. Safety is your responsibility, not AJB Publishing's.



01 The first step with any case mod is to mark the position and size of all the proposed components. It makes sense to test fit your planned 'additions' with everything in place, rather than find out later that the power supply no longer fits due to the placement of an additional blow-hole! My chosen method involves measuring everything and making lots of diagrams on paper before I start the first cut. When planning, it also pays to take note of things such as the orientation of the cable / water connections of components. There is nothing more frustrating than fitting a radiator, only to realise that access to the hose barbs is blocked by the ROM drives. Next, strip the box down to the basic chassis, as this will let you get 'serious' with the cutting tools while avoid inflicting damage on the fragile stuff.

While stripping the case, it is good practise to cover the outer panels with masking tape – as well as giving a perfect surface to draw templates on, the tape helps to protect the finish from inevitable scratches. Removing the back-plane facilitates getting 'inside the case' with the outer panels on, for determining the location of things such as the central cross-brace, a common feature of desktop ATX cases. It is important to note that an obstruction such as this will limit the size of any window that you might plan to install. When considering window size, remember that the glass is not only 25mm larger than the hole all-round, but that it will also protrude into the case several millimetres. If there is something immediately behind that area it will be enough to stop the cover from fitting back on properly.



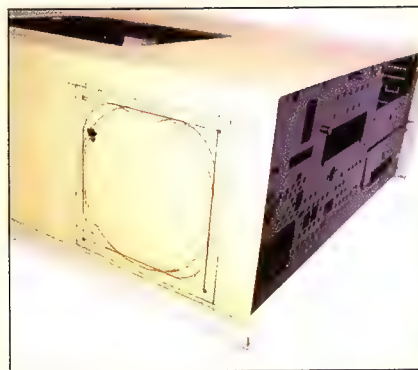
02 Templates can get messy, so using an alternate colour for the cut-line will avoid confusion. After drilling the corner 'starter holes', cut the hole with a jigsaw, then clean up the edges with a fine file and a sanding block to eliminate waviness.



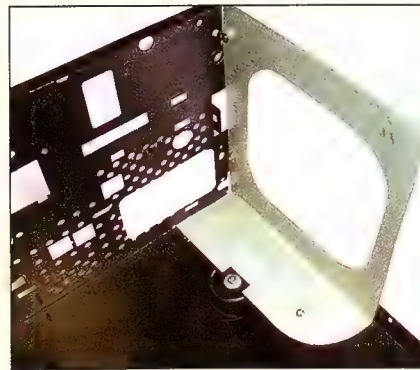
03 Once the hole is sanded to the finished shape, mark out the 25mm overlap where the glass will adhere to the case, and clean both surfaces with acetone. Glazing silicon is then used to bond the two surfaces together.



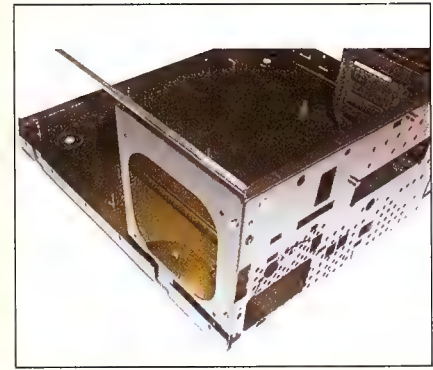
04 Mask around the contact area, spread the silicon evenly over the case surface, and place the glass into position. A heavy weight is then used to maintain pressure while it dries – use a razor blade to trim the excess around the edges.



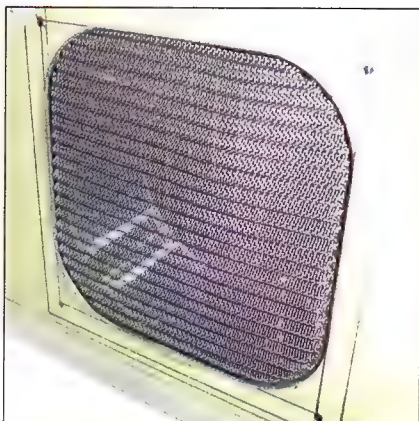
05 The radiator inlet blowhole. First draw a precise template on the outer skin that will reflect the final fan placement – in this example the final opening will be a rounded-square, contoured to the shape of an 120mm aluminium dust filter.



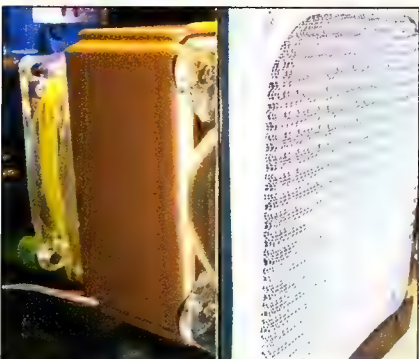
06 After cutting the hole, transfer the measurements to an L-bracket designed to attach to the chassis directly behind the opening, and cut out the centre to shape. Rounding out the corners of the hole in the bracket leaves room to drill the fan screw holes.



07 The four mounting holes for the fan are drilled and the grill holes countersunk so that the surface is flat against the outer skin. After painting, the bracket can be screwed (or riveted) into place, leaving enough gap to allow for the grill.



08 When assembled, the two holes should align perfectly, and the fan can be bolted up to the inner 'skin' without the screw-heads showing on the outside. The grill, or dust filter, is effectively sandwiched between the two layers of sheet-metal.

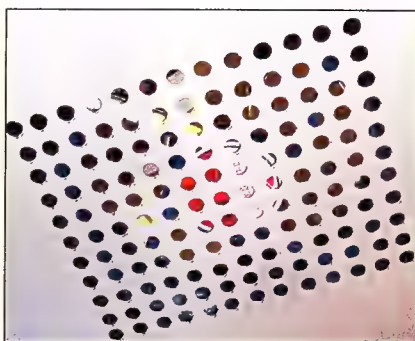


11 Behind the dust filter you might notice a 'quiet PC' solution that I am using for the first time. Siliceous sheeting reduces vibration, and therefore minimises noise. For the same reason, siliceous washers are being used throughout the case assembly – they really work!

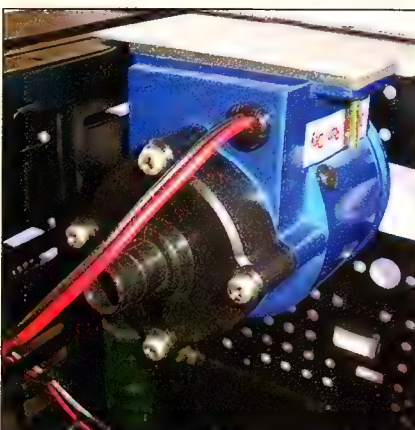
Achtung! Nein deepen screwen!



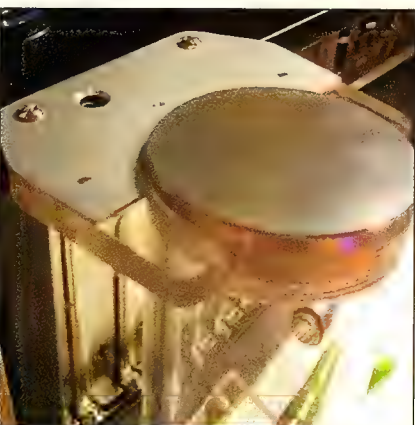
When fitting a radiator there is a catastrophe that can happen easily, but that can be avoided with a little care. Most radiator shrouds are pre-drilled with holes for mounting the fan, usually engineered for self-tapping (PK) screws. Invariably, those holes will also line up with the outer water-tubes. If you use PK screws that are even just a millimetre too long, the sharp point of the hardened metal screw will pierce the soft copper core, requiring the puncture to be soldered and then tested for leaks.



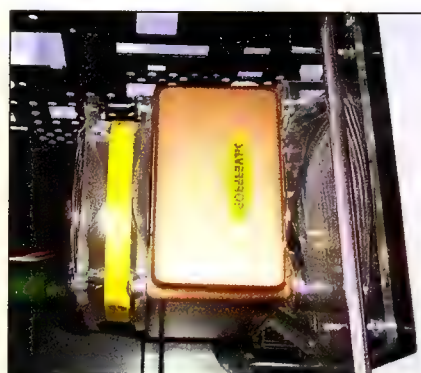
09 The same method can be used to 'stealth' any fan, without using a grill. Simply plot a grid-array of holes to be drilled through the outer skin, so that they line up with the inner opening. Counter-sinking the holes gives it a slick, OEM-look.



12 The Swiftch water pump is mounted inversely on a fabricated 'L' -bracket, fixed to both the front of the chassis and the cross-member. The screws are tightened only slightly more than finger tight, allowing the adhesive rubber pad to better absorb vibration.



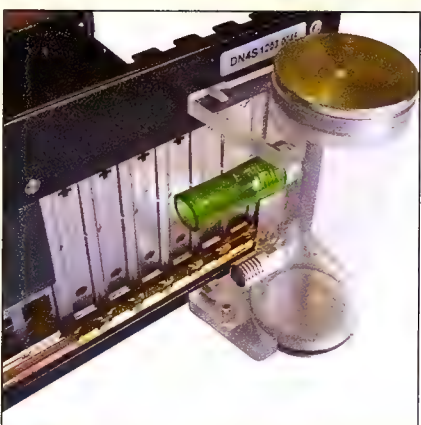
14 The final water cooling component to be fitted is the reservoir, mounted outside of the case for safety and maintenance reasons. The standard top bracket is retained, while a fabricated aluminium bracket has been grafted onto the lower to add support.



10 Rather than a fan, this project uses an 80-120mm adaptor on the SilverStorm80 radiator – using a 120mm inlet to overcome any restriction that the dust-filter might have on the airflow through the 80mm core, and helping it to breathe efficiently.



13 With the pump mounted, the compact nature of the cooling system can be fully appreciated. Locating the main components close together at the front keeps potential leaks 'localised' to a safer area of the case, away from the 240V PSU plug.



15 The reservoir has been positioned so that the inlet is the highest point in the system, aiding the evacuation of air bubbles. Removing air is one of the positives, but the major advantage of a large reservoir is that the additional water volume increases the systems' performance.

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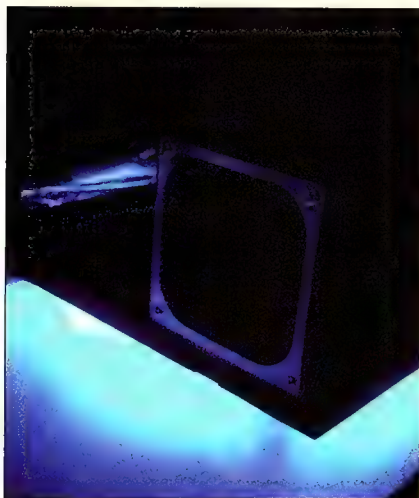
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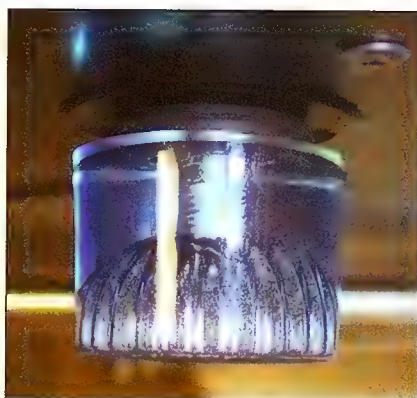
16 What do you call LED feet with the LEDs removed? The LEDs were drilled out, and the translucent feet tapped to accept 4mm screws. They lift the case by an extra 10mm, giving it more ground clearance – which is needed later.



18 Yes, lighting was inevitable! With the case sitting 10mm higher there was room to mount two cathodes underneath, placed in a 'V' so that an even amount of light projects from both sides and the front.



20 The light washing out from under the case gives the appearance that it is floating, especially as the translucent feet help to add to the illusion that nothing is touching the desktop. A sound-sensitive module will be added for music interaction.



17 Rubber grommets have been used as dampeners, placed between the case and the feet – the idea being to minimise noise and by reducing transferred vibration. I was surprised at just how effective this turned out to be, so give it a try.



19 The cathodes are attached using aluminium brackets fabricated from 'C'-channel stock. These are screwed to the floor of the case, with the lights fitted to the brackets using double-sided tape. Wires are routed back into the case through a 12mm hole and grommet.



21 The final step for Part 1 is fitting the 465W two-fan power supply, using a purpose-made siliceous 'PSU cover' to minimise vibration. The rear fan holes have been filled in with acrylic, with warm air extraction now being left to the PSU fans.

Conclusion

So, at the end of Part 1, the project case looks like this. The main 'external' modifications are complete, with the cold air intake, major water cooling components, window and backplane finished. Initially it seemed that a desktop case was going to be the worst possible environment to fit a 'mid-tower' system into, especially the water cooling components, but with some planning and use of purpose-built components it has worked out well.

During this tutorial I have spent time trying to minimise the amount of 'vibration generated noise' that the case will produce. Obviously there is a lot of merit in reducing background noise for watching movies or television, but one thing that may not be quite as apparent is why eliminating vibration is important. When you place even a minor source of vibration on top of a hollow wooden box (like an entertainment unit), the effect is amplified... similar to plucking the strings on a guitar. Harmonics being what they are, a little hum now could easily turn into a major issue later on!

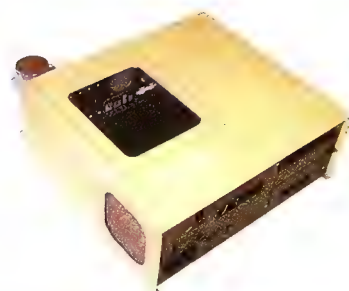
If any of the mods undertaken in this tutorial seem to be missing the finer details, it is because the same subject has been covered before in the 'Modjitsu' section – the idea has been to apply some previously learned skills into a different case format, and to consider some of the intrinsic differences that might need to be overcome.

If you are a new reader I apologise, however back issues are available for purchase!

Looking forward, Part 2 will move focus to the 'inside' of the case, looking at the wiring and plumbing – the circulatory and nervous systems that will keep the final product alive...

As well as adding some more lights!

Ron Prouse



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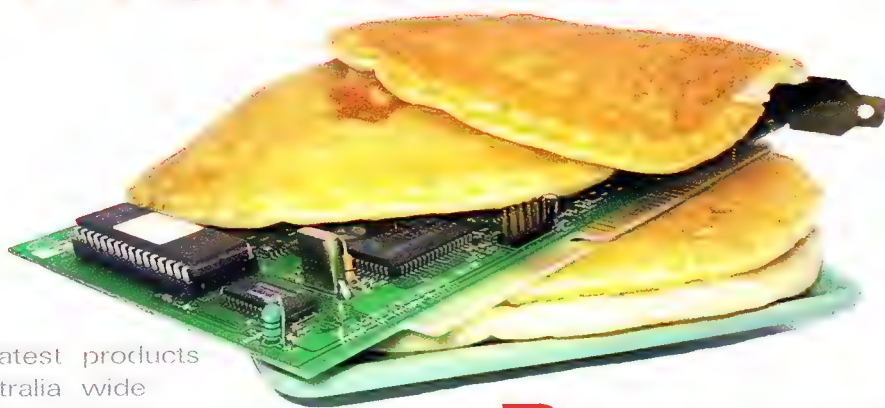
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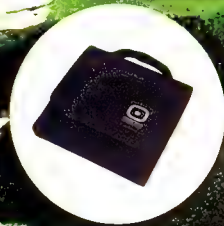
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PHOTOCOPY THIS YOU FOOL!!

- Molex de-pinning tool by XMOD (female if only doing PSUs, male if doing mods on accessory-side work) (www.au.store.yahoo.com/davidandkarma)
- XMOD Molex (female)
- Cable loom, 3mm, 6mm, 3-5M/PSU (www.pccasegear.com.au or www.au.store.yahoo.com/davidandkarma)
- Note: An easy package is the Vantec cable loom kit. For \$16 it's awesome value for money and includes looms of various sizes and heatshrink. (www.au.store.yahoo.com/davidandkarma/vancabsleeve.html)
- Heatshrink (10mm and 20mm)
- Hot air gun, hairdryer or cigarette lighter
- Diagonal side-cutters
- Micro #0 slotted screwdriver
- Bloody dexterous fingers!

The Molex project

Cables. They're the bane of any case designer's existence. Unwieldy, untidy, they contribute a good 90 percent of your case clutter. Phil Chia detangles.

Cable clutter isn't just unsightly, it can seriously impede the cooling efficiency of air-cooled systems by preventing air from circulating inside your PC.

Cable clutter also makes upgrading a pain as one needs to chase power cables all over the place.

More importantly however, the solution can transform an ordinary PSU and cables into a feature of pride and joy.



01 A typical Atomican's PSU is a work of art and engineering. Antec's TruBlue is perhaps one of the most challenging to modify due to the density of electronics within. Some perspex, CCFLs, LEDs and some Dr Dremel treatment gives a nice result, but it doesn't get rid of the clutter!

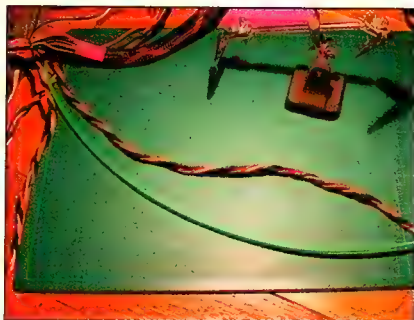
02 Solutions to cable clutter can vary from something as simple as twisting pairs together (simplest), to running spiral ribbon around it, to encasing the wiring package in loom. Loom is the neatest, brings about the most professional finish and it will also protect the cables.



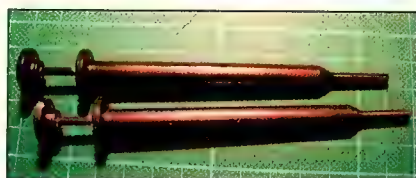
03 Loom comes in different materials, most are UV reactive or even conductive, giving you the possibility to use the loom as a grounded EM shield. The type most widely used for encasing PSU leads is 3mm diameter loom and, as shown here, it can expand out to more than double its size.

DISCLAIMER:

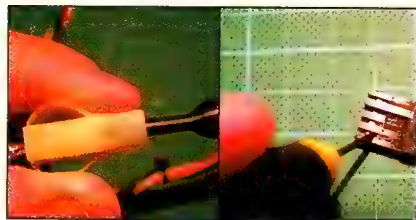
AJB Publishing and Atomic magazine claim no responsibility in your ability to execute this tutorial. We claim no liability in you being able to pull apart your PSU and reassemble it, nor your competence in being able not to slice your wrists with an X-Acto knife. We recommend that you be careful, and that if you have no idea on how to do something, then you shouldn't do it!



04 Unfortunately, loom also frays extremely easily, so expect some wastage at either side. As a rule, allow for about 4cm slack at either end. It is always possible to trim off the excess, but it's impossible to put more loom on. So err on the side of caution!



05 OK, so we have the loom, but how do we get it over the Molex connectors? Simple, use a de-pin tool! The one produced by XMOD is by far the best that I've ever come across and allows for a complete connector to be de-pinned in under 10 seconds! If you're a tightarse, you can try sticking in a wire or using micro-screwdrivers, but be prepared for a long night! XMOD sell both a male and female de-pinner, and they are not interchangeable. For most people, the female will suffice, however, the male is used for preparing Y-splitters or mods on the appliance side.

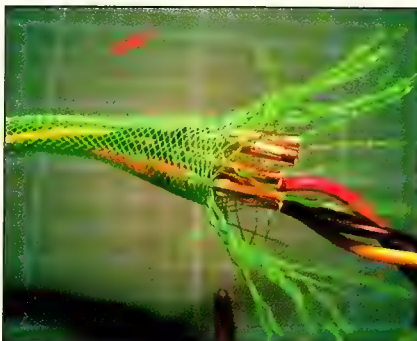


06 De pinning is a cinch. Push the tool hard into the plug, then depress the ejection mechanism, and voila! The pin pops out easily and undamaged. The same goes for the 3.5in power supply. Use a #0 flat head screwdriver to tease the connectors out.

07 That should leave you with a 'clean' run of connectors. While we're at it, improve the reliability of the PSU by soldering all the connectors in. Most PSUs rely on the strength of the crimping to keep the connectors connected. Soldering fuses



everything together in molten metal goodness. For you conductivity freaks, the majority of the power will still be conducted conductor to connector.



08 Bend back the Molex pins towards the PSU. Fray and open up the loop and carefully feed it through. Note in the picture how there is at least 2cm wasted in fray that will have to be cut off with side-cutters.



09 One thing to look out for is the locking clips on the pins getting entangled in the loom. Be careful as if these are sheared off, the only solution is to cut the pin off and re-crimp from scratch!



10 After fitting the loom, slide two sections of 10mm heatshrink over the pins and guide it to either side of the loom. Using a hairdryer or a heat gun, heat shrink it into position. One hint is to 'overhang' the heatshrink over loom so that it actually grips the wire surface.

11 Next, replace the female Molex plug. Simply slide the pin back into the plug and it should snap back into position. Make sure that you get the orientation correct! Facing the connector end-on, pin 1 should be Yellow +12v.

Molex colour for PSU orientation.

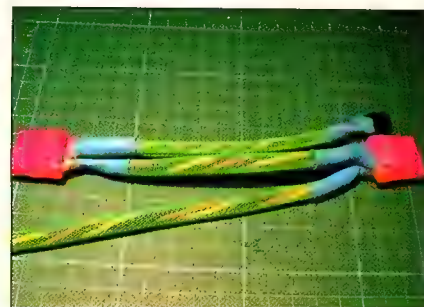
PIN	WIRE COLOUR	SIGNAL
1	Yellow	+12v
2	Black	Ground
3	Black	Ground
4	Red	+5v

Figure 1: www.computerhope.com/help/ps.htm

12 While replacing the Molex female plugs, we would highly recommend replacement with the XMOD plugs. Not only do these plugs come in PiMpEd UV fluoro colours but they're engineered so that you don't need to have a wrestling match to release them. Instead of tearing out the connectors which can result in a damaged plug, damaged appliance or both, these plugs release with just a simple squeeze.



13 That should do it. If you're a real neat freak, heatshrink a 1cm piece of 20mm heatshrink over the back of the Molex plug to strengthen the junction. Not necessary if you've replaced the connectors with the XMOD plugs, but it does make things neater. Repeat for each of the other leads and voila! Sit back and admire your handywork!



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Die magic von gewinnens

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⊕ Amped 7.1-speaker set + Audacity 7.1 sound card combo

Music has its own, aurally delicious quality; a beauty born of the symbiotic relationship between man's creative talents with that of nature's fantastic ability to turn the fluid, gracious vibration of instruments into the clearest of notes.

All this viciously captured like a bunny in a bear trap and whacked into compact, chip form for your listening pleasure. Ah, the beauty.

Innovation (www.innovation.com.au) has graciously provided us with an Amped 7.1-speaker set and an Audacity 7.1 sound card (combined value of almost \$400) to give away, so you too can hop away to the all natural sound of, well, sound.

Q: How does Michael Jackson pick his nose?

⊕ Minitar four-port 802.11g wireless router

Confusingly, like many words in the English language, port has numerous connotations. For example: 'The ship sailed into the port.' Or when used as a noun, 'Let's drink some port.'

Variations by usage of a suffix make it even more verbally precarious: 'My car is a portable little goggomobile.'

Thankfully, its use is very clear when mentioned in regards to routers. 'My router has four ports, as opposed to two.' Well – except when you start talking about port blocking, which is an entirely different port of calls, err, can of worms.

Thanks to PC Range (www.pcrange.com.au), we have a Minitar 'four-port' 802.11g wireless router to give away. It'll have you porting away in no time. Toot-toot!

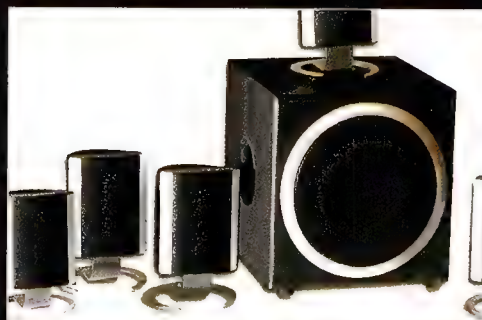
Q: When is it bed time at Michael Jackson's house?

⊕ 10x Unreal Tournament 2004

Here's our idea for a pigeon cannon. Take a huge, vacuum-powered jimmy-rigged solenoid, whack it on the back of the biggest postal tube you can find, load in your flying rat strapped to a block of TAPT, and ignite.

We submitted this to Atari for consideration as a new weapon for Unreal Tournament 2005. We got a polite letter back saying our idea had been taken under advisement, along with 10 copies of the awesome UT2004. Massive props to Atari (www.atari.com.au) – and don't be surprised if you find yourself under attack from cannon-propelled pigeons in the near future!

Q: Why was Michael Jackson spotted at K-Mart?



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Atomic 37 winners: Microsoft Wireless Optical Desktop Elite & Wireless IntelliMouse – Black Leather Q. In what specialty field does Dr. Derek Smart hold his PhD? A. Dr. Derek Smart does not hold a PhD in any specialty. A. Janet, Townsville, Qld.

Three Jazz 1.1 Speaker System Q. What is the Take 2 Coke Machine's claim to fame? A. It was attacked by Dr. Derek Smart. M. Hall, Asquith, NSW. K. Fung, Balwyn North, Vic. S. Rickman, Leeming, WA.

Three FX Game Pads Q. What do Serious Sam and Dr. Derek Smart PhD have in common? A. Dr. Derek Smart has licensed the Serious Sam engine. K. Ibbs, Cohuna, Vic. K. Groves, Richmond, NSW. L. Langdon, Lenah Valley, Tas.

Tricks of 3D Game Programming Gurus reference Q. According to Dr. Derek Smith PhD, what version of Battlecruiser 3000AD was released by Take 2 in 1996? A. The original version 1. S. Clarke, North Hobart, Tas.

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The sun rises in the east...



Jim Morrison (The Doors) knew what he was saying when he sang 'The West is the Best' in an ironic voice during the 'The End'. The pop culture buzz coming from the West isn't so sharp anymore. It's blunted and blurred by the katana-edginess of Asian trends and ideas cutting through this century.

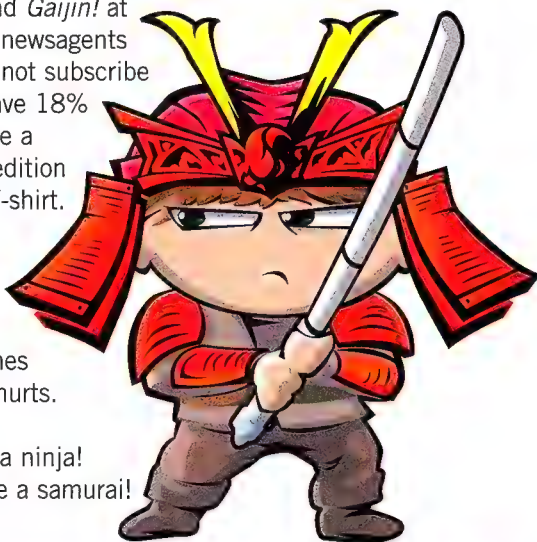
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39

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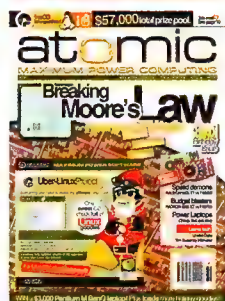
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And for doing nothing, you'll have a chance to win a smokin' Diamond Digital DVDRW844-058 DVD burner, courtesy of those nicey nice people at Mitsubishi Electric (www.mitsubishielectric.com.au). At eight-speed, this sucker will burn a full DVD in 10 minutes. That has to be a record!



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C/A39

Atomic 37 winners: ASUS upgrade kit: J Stoeckel, North Brighton, SA. Counter-Strike for Xbox: B Langberg, Littlehampton, SA • A Shrapnel, Brunswick West, VIC • G Rizk, Preston, VIC • G Hayman, Mandurah, WA • R Brocklebank, Magill, SA

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Mullet island

When you go down under down under, John Simpson finds that everything comes up apples.

I recently had my hair cut. Normally I wouldn't think twice about it, but on this occasion it seemed to attract a lot of attention. A few friends, usually reserved, told me I was looking 'too sharp to go out without a beanie'. I was stopped in the street by people wanting to know where I'd had it done (I think their exact words were 'Who could do that to you?'). I even had encouraging comments from some girls driving past: 'Nice head!' they yelled. I called back my thanks, for both the kind words and the thrown fruit.

Where did I get this new style? Oddly, it was the same place I now buy my computer games, down a back street in a town in our most southern state. Yep, you read right: this *Atomic* correspondent has recently moved to the Apple Isle, the Harradine headquarters, the red-arsed end of the great Australian gibbon known as *Tasmania*.

In a weird turn of events, a month ago I found myself packing up my belongings (PC, beer fridge, buttock-grooved desk chair) and relocating to the place most school kids leave off the map, and the World Trade Organisation lists as a developing country. It wasn't a decision I made lightly, as it meant leaving the luxury of cable television and paved highways. But it was one that's revealed some interesting facets about computing across the Tasman.

One: despite what you hear, electricity

has been here for many years. True, each kilowatt costs the equivalent of the Loy Yang power station, but at least the grid is stable and the lights don't dim when you preheat your oven.

Two: yes, they do know what a HyperThreaded P4 is, and hope to have one imported before the current state government grants expire. I've also discovered there's quite a Mac following here, probably owing to half the population having art degrees, followed closely by qualifications in home economics (apples) and forestry (old growth).

Three: just about everyone likes playing the latest computer games. For Tasmania, that means that Frogger 64 and Galaga are top choices, with Half Life tipped to be the next killer FPS. I asked one checkout chick if she liked Max Payne 2 – she invited me to something called 'Madam Strap's House of S&M'. I'm guessing it's a local LAN group, although I can't work out why she told me to bring baby oil and a feather duster.

Which brings me back to my haircut. It turns out the guy that cuts my hair also sells video games and PC parts, stacked amongst the photos of 70s movie stars with varying height pompadours. I asked him why he'd decided to branch into IT, and he was momentarily distracted. After he stopped the bleeding from my severed ear, he just shrugged: 'Makes me more money than haircuts, I guess.'

Now that my ear has healed, I can see what he means. Industry down here can't compare to the big cities. Often you'll find shops selling two very different products, trying to capitalise on horizontal markets. Just like my barber – he figures that guys wandering in for a trim also like playing computer games. Not a bad assumption, particularly for a man that thinks IT is a type of optometry.

So I'll keep going back to my new hair stylist, having the luxury of browsing the games while he hacks away at my hair or any other part of my body that gets in the way of his scissors. In fact, it serves us both very well. I buy all my new games from him, and he can finally afford to build that sunroom and send his daughter to private school (the game prices are a bit inflated in Tassie – 'Transportation costs,' he tells me).

Not to mention my classy 'do. At first I was a little nervous about the style, but he's assured me that mullets are back and I'll be a local trendsetter. After all the positive comments I've had, I'm inclined to agree: it's not everyday that a car-full of girls tosses you fruit and whatever else they have loose in their glovebox.

So I'm off to touch up my cowlick. I've got a LAN party to crash, and some feather dusting to do. These Tasmanians – always so concerned about cleanliness. I think I'm going to like it down here. . .

crashtest #12 - Sometimes It Feels Like It

Instant message received!

GRIMEY: Hey dude, the Desert Combat 0.7 patch is out! Download it and we'll play a game! 😊

BoomCall: Cool. I'm on dial up, so it'll take a while. I'll let you know when it's done!

Download Meter: 0%

Download Meter: 0%

Download Meter: 0%

Download Meter: 0%

Download Meter: 0%

Download Meter: 1%

Download Meter: 1%

Download Meter: 2%

Download Meter: 100%

...and From this ancient meter is where we derive all modern time. We've preserved the client and server our ancestors called "FilePlanet", so that Future generations may understand the nature of eternity. Any questions?

What if the meter reaches 100%?

It never will, little girl, it never will.

Written & Illustrated by Craig Simms. © Copyright 2004 Atomic: Maximum Power Computing



atomic
MAXIMUM POWER COMPUTING

Reader Awards
2003

introduction

Who has the right to claim they are smart enough to pass judgement across an entire global industry worth billions of dollars? Who dares presume they can, with a mere click of a mouse button, condemn the efforts of thousands of hard working people? Who is so sure of themselves they can pick the wheat from the chaff and declare a product categorically the best of the best?

You do.

No one else. Just you.

If we had an award category for the 'Smartest, most informed and intelligent magazine reader' then it'd go to Atomicans. It's a beautiful thing.

The *Atomic Reader Awards* are the opposite in nature to the Golden Globe awards. There's no backroom corruption, no bribery, no mystery. No Adam Sandler. It's the voice of the people – you – and that makes it special.

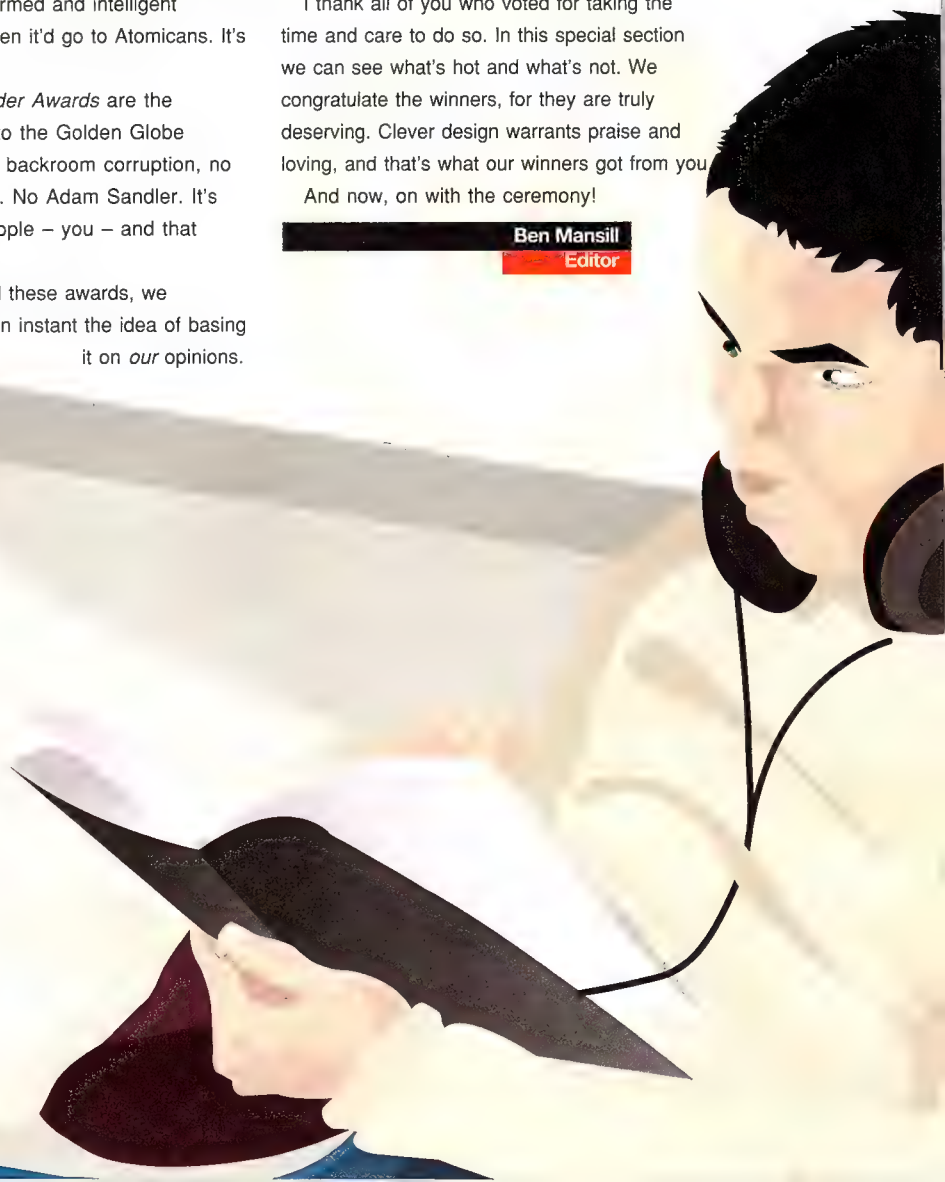
When we created these awards, we dismissed in an instant the idea of basing it on *our* opinions.

Each month you read our opinions. As wise as we are, we are few and you are many. The *Reader Awards* are the best way to discover conclusively and absolutely which products are the best. To win is the highest honour. To not win is a kick in the pants wakeup call to do better.

I thank all of you who voted for taking the time and care to do so. In this special section we can see what's hot and what's not. We congratulate the winners, for they are truly deserving. Clever design warrants praise and loving, and that's what our winners got from you.

And now, on with the ceremony!

Ben Mansill
Editor



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2nd Largest Australian Owned ISP

Performance video card chipset of the year

the winner is...

2nd ATI RADEON 9800

3rd NVIDIA GeForce FX 5950



You, the readers, have marked 2003 as yet another clean sweep for ATI, easily swiping and bagging all awards where video cards are concerned. And for damn good reason too – ATI has had an impressive line-up of cards on the table this year, and its power card, the 9800XT, doesn't skimp in this department.

Unlike NVIDIA's chunky FX range with the nuking of a PCI expansion slot or two, the 9800XT is the largest (and heaviest) cooling solution we've seen ATI fit to any of its cards, and it still remains single-slot slim. Equipped with a wide 65mm fan, this allows a slower RPM rate, thus providing a much quieter experience – albeit heated at times.

As you may very well know, clock speeds these days are nothing to go by. As the 9800XT is still based on the 0.15-micron process, the core clock is actually slower than that of the 0.13-micron based 9600XT (winner of value video card chipset). However, it is significantly faster because of architecture differences, a doubling in rendering pipelines and 256-bit memory bus.

After swamping the video card marketplace, it's had a vice-like grip in the performance stakes and there's no way in hell it's going to loosen its grasp anytime soon. It's all about consistency in the caning of arses.

Prices are constantly dropping and, as voted by Atomicans a-wide, it's the most capable performance card currently available to those within the margins of our solar system. With games playable in high-res with 4xAA and 16xAF flicked on, it fully deserves this prestigious award. Here's to another ecstatic year of ATI frame spurring goodness.

Value video card chipset of the year

the winner is...

2nd ATI RADEON 9600

3rd NVIDIA GeForce FX 5600



Moving to a 0.13-micron process was the best move ATI made with its budget chip, the 9600. And it certainly showed. Ever since the drop in core size, it's been the ultimate beast to contend with in the budget market. But it was just too damn cheap and more of the same train of action occurred with the advent of the newer and far more beastly XT variant of the 9600. It leapt to a new high and flattened the already roadkill competition. Heck, beating the competitor's high end cards with a budget card is quite an admirable feat.

Forget driver cheats (though ATI wasn't entirely clean from the driver 'tweaking' situation) and renaming budget cards after the competition *cough* FX XT cards *cough* – this card is pure and clean power. Definitely the well-deserved holder of value chip of the year.

One thing to watch out for is whether or not your new 9600XT comes packed with a Half-Life 2 token. Last December marked the final month that manufacturers were given HL2 tokens for 9600XTs – these days a small fee must be paid. As a result, several manufacturers no longer include it.

Fast, cheap, cold and silent; those four words should have instantly painted a vivid image of a feisty 9600XT card in your head. A bloody brilliant gob smacker ready to whack you in the gut with a good dollop of surprising performance. Major kudos to ATI for its highly successful year. With that said, having NVIDIA's new architecture close in sight, let the games begin for the year that is 2004.

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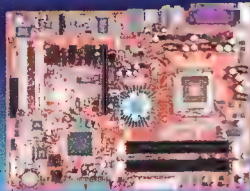
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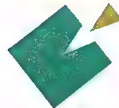
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- 10/100 LAN, 6-channel audio, S/PDIF In/Out
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Athlon motherboard chipset of the year

the winner is...

2nd NVIDIA nForce3

3rd VIA K8T800



Like Intel, AMD has other manufacturers create chipsets for its processors – the difference being AMD doesn't *also* make its own chipsets. Which is *almost* a crying shame, really, seeing as Intel makes the absolute best chipsets for its own CPUs.

Almost because, in other respects, with a force like NVIDIA behind you, there's no need to be too concerned with a lack of powerful and feature filled chipsets. Well, with an NVIDIA nForce2 Ultra 400 Northbridge chipset being the driving power behind your CPU, there's really no need to make your own chipsets anyway. Include the fact that NVIDIA renamed 'Northbridge' to Media and Communications Processor, or MCP, and it's dancing on The Force. . .

The original nForce was a budget beast – not insanely dribble-worthy, for the lack of a better expression, but it did raise the bar in terms of features for budget boards. Back in January 2002 at CES, NVIDIA was wielding the original nForce chipset promising 'unmatched system performance' with the optimised 128-bit memory controller 'TwinBank' and a dynamic adaptive speculative pre-processor (DASP) to boost CPU performance, among many other spectacularly named technology. It was a great chip, but nothing to sell your potato farm over, performing on par with the KT266A.

Fast forward to today and we have a performance winner, swiping awards left, right and under. Unleashed with support for Dual Channel DDR (dual-independent 64-bit memory controllers), multi-display capable, dual Ethernet, NVIDIA SoundStorm Dolby Digital 5.1 audio and all the other wonderful features of the original nForce plus more, it pummelled the nail and slammed it right through to the performance market. Feel the force.

Pentium motherboard chipset of the year

the winner is...

2nd Intel 865

3rd ATI RADEON 9100 IGP



Intel has had another successful year of creating some seriously solid performing motherboard Northbridge chipsets. The company just can't be beat, and being the manufacturer of the Pentium processor is probably a slight advantage. Just possibly.

Aimed at the performance machines/entry level workstations, there's little wonder that this year, it's the mighty 875 chipset that walks away with the phat golden chain. Supporting Dual Channel DDR400 with four DIMMs and sporting a mighty powerful 800MHz front side bus (or 533MHz if you have yourself a slightly older processor), this beastly slice of wafer and collection of transistors is a well-deserved winner.

With the horridly expensive RD RAM out the history window and now listed in the Atomic Labs as being damn slow and from the ghastly Dark Ages, we now have ourselves Dual Channel DDR RAM pumping some serious iron, and stacked with an 800MHz FSB, the 875 lets DDR strut its stuff. A lot has happened to DDR RAM in the past year. In fact, who would've thought that SD RAM would go so far; first its speed is doubled via the use of both the rising and falling clocks of the memory frequency; then came Dual Channel to thwart any misconceptions that the DDR power-pendulum was slowing down sometime soon. Also aimed at the workstation market, this chipset also supports the more expensive ECC memory.

As voted by Atomicans, Intel has made a truly powerful performance chipset in the 875. With PCI Express peeking just around the corner, we excitedly anticipate the next chipsets for Intel to fabricate. Bring on the pimp machines, this year's gunna be big.

Motherboard manufacturer of the year

the winner is...



2nd ABIT

3rd Gigabyte

Contrary to the belief of many, the name 'ASUS' is not pronounced like 'Az-us' or 'Aye-sus' – both are common mispronunciations. On the edge of your seat yet? It's actually pronounced, wait. . . 'Az-oos'. The anticlimax being the world is now a safer place.

ASUS has, for a long time now, been a company well known for creating top quality motherboards. Obviously this hasn't changed and you still love them lots. Motherboards ASUS releases to us power hungry hounds always smell of quality and you're usually guaranteed to find them equipped with tonnes of interesting features. And those are *useful* features, not 'Easter egg' features.

ASUS always thinks things through to deliver nothing but the utmost best. This shows in the products it churns out; and during 2003 ASUS managed to create some seriously remarkable hardware on the mobo side of things.

In the year gone by the usual great boards have cropped up from ASUS. The company released top boards based around Intel, VIA, SiS, nForce and ATI chipsets. The special ones we checked out over the year included the K8V Deluxe Wireless Edition which featured a first – onboard wireless LAN (802.11b). Forever lingering in the future, it was also among the first to push the Opteron platform with its solid nForce3 Pro mobo, SK8N.

As the chairman and CEO of ASUS, Jonney Shih, has said, its winning formula is, 'winning = marketing (quality*speed*innovation*service) / cost'. Holding the holy grail in this category, we'll just nod our heads and say this is a successful method. Rock on with the new year.

ASUS®

Video card manufacturer of the year

the winner is...



2nd Sapphire

3rd GeCube

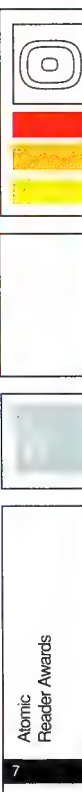
If there's one manufacturer that can make *powerful* graphics more affordable and that extra bit special, it'd have to be PowerColor. You know, it's only natural. This company's popularity hasn't grown singularly because of its name, that it just makes damn fast video cards, nor the fact that its products are more affordable than most manufacturers would dare venture their moolah rating near. Na-huh. More of a mixture of those plus a bonus dash of love.

The popularity comes from the fact that, yes, PowerColor builds quality video cards but it tends to tweak them as far as possible while still keeping the cost factor down. A top example would be the recent PowerColor RADEON 9600XT Bravo card reviewed in *Framerate Atomic issue 38* – instead of the standard ATI reference design memory frequency of around 600MHz, the company clocked it up to 680MHz and embedded some better quality modules, ticking away at 2.5 nanoseconds (ns) instead of 2.8 or 3.3ns. Not only that, but PowerColor also decided to whack VIVO support on top of the already arse-caning card. And it was both as cold and as cheap as a block of land in Antarctica. That there is a prime example of PowerColor's dedication to providing the market with nothing but the best and most authoritative cards.

Going by the results of video card chipset favourites for both performance and value cards, the company obviously went down the right path, devoting itself to creating top cards based on the hugely popular ATI chipsets.

Raise your champagne glasses – we look forward to seeing another year of superb video card releases from PowerColor. Huzzah!

POWERCOLOR



Case manufacturer of the year

the winner is...

2nd Thermaltake

3rd Lian Li

Antec
The Power of You

Antec know what's important in a PC case. Well, it's had since 1986 to figure it out. Its products are loaded with features, yet are sleek and classy in design.

The two most popular Antec cases address two important issues with PC design. The Sonata was produced with silence in mind. Part of the Antec 'Lifestyle' range, which also includes two desktop cases, the Sonata allows decent ventilation without creating the sound of a harrier jet in the process. In fact, it is close to dead-silent, and has been touted as the quietest case on the planet.

The 'Lanboy' family focuses on portability, being incredibly lightweight and made entirely of aluminium, except for the perspex window, yet still comes in at under \$200.

Antec also builds cases for file-servers, which still provide performance without giving away precious decibels. It doesn't just make tower and desktop cases, however. Antec also produces a range of rackmounts from 1U up to 4U, and related accessories.

A well designed, durable and well regarded manufacturer, Antec has earned its stripes.

Cooling product of the year

the winner is...

2nd Vapochill PE

3rd Cooler Master Aero 7

Tt Thermaltake
Cool all your life

Although the company has only been around since 1999, Thermaltake is arguably one of the most respected players in cooling solutions for PCs.

From basic chipset cooling through to the much respected Volcano series of CPU coolers, its cooling solutions cater to the widest possible market. Admittedly, Thermaltake hasn't always hit the mark; however, people are often happy to compromise, such as with the Volcano II Xaser Edition.

Despite other HSF solutions providing better cooling, the Volcano II Xaser looks sexy, is dead easy to mount with its solid clip design, and is not over-priced.

The heatsink itself is a 40-fin 70 x 66 x 30.8mm, full copper design, sporting a chunky 80 x 80 x 25mm fan, and moves an impressive 2.12 cubic metres (approx) of air per minute.

It is a good middle of the range solution for even the highest end AMD socket-based systems, and thoroughly deserving of an *Atomic Reader Award*.

CPU of the year

the winner is...

2nd Pentium 4 (Northwood)

3rd Athlon 64

AMD

With the unveiling of the Barton core – AMD's seventh major Athlon architecture update – there really wasn't much of a clock change. In fact some Barton chips dropped in speed. What had geeks jumping around like crazy was the massive 512KB of full speed L2 cache.

The other update was the FSB (front side bus), which was upped to an effective 333MHz from the prior effective FSB of 266MHz – although several Thoroughbred-B chips also started using 333MHz.

The physical change was the larger die size – at 101mm² compared to the older 80mm², to allow for an extra 17-odd million transistors.

The great aspect about this new incarnation of Athlon was the price – it remained as affordable as the previous Athlons. It also didn't need a socket change – just a BIOS update.

With all this in its bag of tricks, the Barton couldn't fail – Atomicians have spoken. This Athlon core revision rocked your socks.

Audio product of the year

the winner is...

Creative has always been a big name in the computer audio industry – in fact, it's a name so humongous, so prestigious, that it eclipses and dominates all that resembles a sound card or computer multimedia product naked of Creative branding. Since the dawn of its existence in July 1981, Creative has been serving the large, constantly undernourished community of computer gamers and audiophiles with feasts so lavish that a single morsel was never enough to satisfy.

What this means is that you can be confident when you buy something with this illustrious, long-standing name upon its gilded casing, or stamped on its high-tech silicon chips, that you're getting quality – Creative quality.

And that's grand.

In the limelight for Audio product of the year is Creative's outstanding Audigy 2 ZS. Never one to abandon its roots, Creative held firmly onto its SoundBlaster brand as it grew a new, elite breed of sound card – the SoundBlaster Audigy. Introduced back in 2002, the Audigy became *the* audio card to own, following in the mighty footsteps of its predecessor, the SoundBlaster Live!

In late 2003, we again had the pleasure to meet another of Creative's prodigy children, in the form of the Audigy 2 ZS. Through evolution, dedication and hard work, the Singapore-based company produced another must-have audio product. Complete in its decked-out configuration with external hub, remote, S/PDIF, EAX 4.0, full THX certification, DTS ES, and Dolby Digital EX, the Audigy 2 ZS is the ultimate in PC audio solutions. It's the card all enthusiasts must own. Period.

2nd Creative Audigy 2 NX

3rd Zalman 5.1 speaker headphones

CREATIVE



Innovation of the year

the winner is...

The original x86 architecture remained surprisingly unchanged for a long time. Apart from tweaking and the ramping up of speeds due to improvements in manufacturing processes, the only other significant enhancements were the 'bolting on' of functionalities such as seen with MMX technology, back in the mid-nineties.

AMD hit the eighth generation of its processor family with the introduction of the x86-64 architecture. This was a proper extension of the x86 architecture to provide the capacity for 64-bit processing.

The full backwards compatibility of the AMD Opteron, for example, distinguishes it from its nearest competitor, the Intel Itanium. AMD 64-bit architecture allows seamless porting of legacy 32-bit applications into 64-bit operating environments. Whereas the Intel 64-bit solution requires a rewriting of the old 32-bit code to support the new architecture.

There is no 'translation layer' either. The x86 instruction set has actually been extended to accommodate the 64-bit code, so executables can contain a combination of 32 and 64-bit code. There is no performance hit either. In fact, the wider data paths available allow a 32-bit OS and other software much more breathing space which theoretically improves performance in legacy environments.

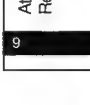
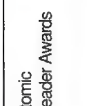
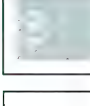
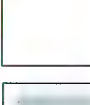
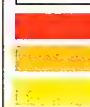
The support from both the Microsoft and open source communities means that there is now a solution that is backward compatible with previous systems, is a platform unto itself, not reliant on other hardware manufacturers (processor and motherboards are fully AMD-driven), and will have a fully supported, dedicated operating system.

Innovation is not just about being harder and faster. It's about accessibility, integration and value. That's what sets the AMD 64 architecture apart.

2nd Logitech MX700 mouse

3rd Centrino

AMD



ISP of the year

the winner is...

2nd Optus

3rd Telstra



It comes as no surprise that iiNet scores the crown for ISP of 2003. Starting out in the great western side of our large red island, iiNet picked up pace in WVA as an increasingly popular service provider. It was generous with the plans on offer, not something seen all too often. It expanded to other regions of Australia and now covers the majority of Australia.

iiNet continually surprises us by updating and improving its service by leaps and bounds, at no extra cost to the consumer. There were hiccups along the way in the early stages of enhancing its services, with unfortunate but necessary downtime due to server maintenance and major changes in the entire network, however it has pulled through nicely with practically no downtime and some of the best plans we've seen in a long time. The available plans offer loads of downloading for the price, but to top that all uploaded data, regardless of where it's headed, remains completely free. Also, unlike most ISPs, iiNet offers the option to toggle on/off port blocking at the server side (ports 25, 80, 139 and 443).

It even joined the PIPE (pipenetworks.com) network, which is basically a central link between subscribing ISPs that allows free bandwidth cross-ISP within the same state. For those who eat bandwidth, this truly is a free lunch.

Their most popular plan – blink 512+ – really benefits from all the upgrades and changes and recently saw a boost from a 12GB download cap (6GB on/off peak) to 32GB (16GB/16GB). Simply astounding – kudos to the iiNet team. As voted by you folk, it's the best internet service provider around right now.

Mobile product of the year

the winner is...

2nd Creative Audigy 2 NX

3rd Sony Network Walkman NWMS70D



A quote from 'cmdwedge' on the *Atomic* forums about the iPod: '...it looks awesome, sounds awesome, [and] is awesome.'

Copyright issues notwithstanding, MP3 players have become something of a godsend in terms of mobile audio. Gone are the days of cassette-based portable music featuring second rate sound, laborious track creation processes and lugging around of numerous, ever-deteriorating audio cassettes. Today it's all about storage, functionality and quality.

With a laptop sized internal hard drive and each new model providing progressively more MB for your dollar, a current model 40GB iPod can store up to 10,000 tracks.

Without sounding like an advertisement for Apple, the iPod also brings a bunch of other features that extends its functionality to far more than a bog standard audio player. It features a calendar, a contact list, alarm clock and voice recorder. It can also be used as a remote storage device for non-audio files.

The real clincher, however, is that apart from the hard drive mechanics, it contains practically no moving parts. The controls are all handled through solid state, touch sensitive buttons and dials.

Audio quality is on par with devices such as the Creative Nomad, ie: bloody good.

Mixed reports are to be found, regarding the quality of the supplied headphones. Our own experiences have confirmed that most bundled headphones are best donated to Oscar the Grouch anyway.

Regardless, the smooth feel, the size and shape, sensitivity to touch and the desire to stick your hand in your pocket and play with it, has ensured iPod was chosen by *Atomic* readers as the number one mobile product of the year.

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Back the f**k up



Doesn't it just ache your gut to think that there's an *Atomic* you've missed out on?

We spread all the *Atoms* out on the office floor and took the above photo with our SnappyCam. Then we stared and stared. As you've probably already done yourself. Unless you don't have all the *Atoms*. In which case you need the form on the left.

Mini barebones manufacturer of the year

the winner is...

2nd MSI

3rd ABIT

 **Shuttle**
www.shuttle.com

Once primarily a motherboard manufacturer, Shuttle wasn't exactly the first brand to hit the noggin when mobos were mentioned. But say 'mini-barebones', and it's hard to associate any other name with these wonderboxes. With the incredible skill Shuttle has obviously hired in designing their kick-arse barebones systems, there's little wonder why it screamed past the competition and won mini-barebones manufacturer of the year by a giant barge pole.

The competition has tried to match the quality that Shuttle has set a bar for, with many failing dismally. Shuttle continues to better itself by further perfecting and adding on to its already highly tweaked systems. This is the company others should be looking closely at – how it pays attention to every detail, minor or otherwise.

With the arrival of Windows XP Media Center Edition, and the constant dropping of barebones prices like leprosy-infected digits, there's no doubt the home theatre market will only continue to amplify at an impressive rate. Where this takes Shuttle, we can only guess – but one thing's certain; the future of the lounge is looking mighty remarkable.

Monitor manufacturer of the year

the winner is...

2nd BenQ

3rd Samsung



Sony make great monitors, what can we say? Your wallet's gunna know about it, but your eye's are gunna be happy with it.

Its range of LCDs and CRT displays are widely respected in the industry and have been the brand of choice among many professional studios and production houses around the world for years, distinguishing themselves with exceptional image quality.

But it isn't only the industry suits that recognise Sony's excellence. Sony displays have always caught the attention of gamers and graphic artists, who have a keen eye for sharpness, scan frequencies and colour temperatures, counting pixels on one side of the brain, calculating the contrast ratios on the other. In the warm afterglow of some hard and fast LCD or CRT action, the size will always matter, and the faster your response time, the better. The question these days is 'where do you mount it?'

Sony isn't just a display manufacturer. It is a global corporation – and while it sits comfortably in other markets, it dominates in the monitor space.

Optical drive manufacturer of the year

the winner is...

2nd Pioneer

3rd Sony



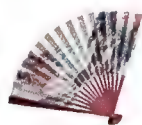
Lite-On kicked off an optical storage research and manufacturing business back in 1995. Pretty soon, it had an R&D team comprised of 130 engineers, each with their own Master and PhD degrees. Only one member of the executive team does not have a Bachelor or Master's degree in electronics or engineering. Actually, he has a Bachelor of Economics, but let's not get pedantic.

Against tough competition, and with the collaboration with JVC, Lite-On has positioned itself as one of the most respected manufacturers of optical drives. Consistently releasing products which are strong, stable and competitively-priced, the team at Lite-On have developed and patented an anti-vibration design, as well as perfecting the art of firmware upgrades.

One of the strongest players in the OEM/ODM market, it could be argued that Lite-On is responsible for the plummeting prices of optical devices, and you – the end user, can only be pleased about this.



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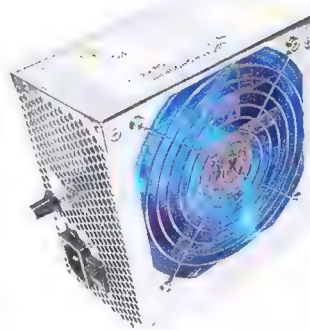
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PC game of the year

the winner is...



2nd Grand Theft Auto: Vice City

3rd Max Payne 2



Developed by a company called Infinity Ward, and later bought out by Activision, Call Of Duty (COD) is a hellishly realistic WWII FPS and has even been known to induce motion sickness. It isn't the most difficult of games to master, however, which is probably half the appeal. Even those with the hand-eye coordination of Stephen Hawking should get some enjoyment from this game.

Featuring yet another Omaha Beach Invasion scenario (BF1942 anyone?) you infiltrate enemy camps and carry out your missions. The really interesting aspect is being able to play from the unique perspectives of the Americans, the British and the Russians.

COD is not a 'lone gunman' type game. This is very much team-based play, requiring planning in tactics and manoeuvres. By mission end you feel as close to your team members as though they were your bestest drinking buddies, each with his own character traits and skills as a soldier.

The atmosphere is as good as today's 3D engines can provide, even though the hardware requirements aren't as bleeding edge as you may expect. The convincing positional audio, the sound effects and the cries for support from wounded platoon members, will have you hooked like a coat-hanger.

The action is hard, fast and addictive. Nothing revolutionary, COD is just loads of realistic fun with a very refined, tight gameplay and a neat uncomplicated interface.

This is one of those games which will spawn a bunch of expansions and mods, and be the game of choice at many a LAN party. It seems Activision got its money's worth.

Xbox game of the year

the winner is...



2nd Project Gotham Racing 2

3rd Crimson Skies



The town of Kotor is situated at the foot of Mt Lovcen, at the end of the Boka Kotorska Bay, in a fiord which. . .

KOTOR is actually the abbreviated 'Knights of the Old Republic', another of the LucasArts, Star Wars collection, and probably one of the best RPGs to be found. Set around four thousand years before Episode I, this stays true to the Star Wars universe, featuring the familiar Star Wars culture, machinery, alien-looking creatures and the trusty old lightsabre. You still get to train to be a Jedi Knight and even opt for the dark side, if that's your thing.

Much to the ire of PC gamers, KOTOR was released first on Xbox. Xbox owners went nuts over it of course, being one of the most detailed and challenging games now in their collection, and taking out bags of awards around the world.

It has been described as a combination of Baldur's Gate and Star Wars, with a massively immersive environment. The gameplay is linear, but there are many optional side-quests you can choose to complete, or not.

Graphics-wise, the Xbox has seen better. There is the occasional frame drop, although no really obvious aliasing (jagged edges). The strength of KOTOR lies in the storyline, impressing the most hardcore Star Wars fanatics. It combines just the right amount of intrigue, without being difficult to follow. The dialogue is terrific, with a top soundtrack adding to the atmosphere.

Best effort from the LucasArts stable yet! And for the non-gaming heathens, Kotor is simply a nice little town in Montenegro. . .

PS2 game of the year

the winner is...

Prince of Persia: Sands of Time

www.princeofpersiagame.com



The guys that created Splinter Cell and Rainbow Six 3 have developed the incredible Prince of Persia: Sands of Time. PoP:SoT is a single player only, which is interesting considering the overwhelming popularity of multiplayer FPS.

Set somewhere in the Middle East, probably the selfsame neighbourhood Aladdin and Ali Baba hung out with their homies, the Prince (you) has been conned into opening the 'Sands of Time', a magical hourglass, turning everyone in the kingdom into evil sand-zombies. Oops. Better fix that, and kill a few bad guys on the way.

The action takes place in and around the palace, including an underground cavern, waterfall, an observatory and even a few hidden magic fountains.

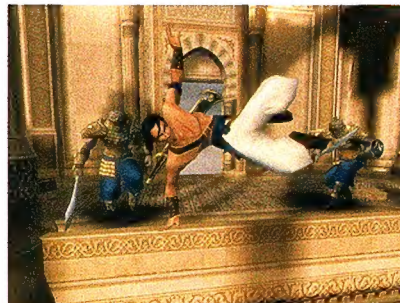
The key to this game's popularity is its playability. The incredible Lara Croft-esque moves that you are capable of pulling off, such as bouncing off walls, swinging from ropes and hanging from ledges are remarkably simple to achieve. The control system will not allow you to deliberately 'fall' from any precarious situation. So novice gamers will not get easily frustrated by the gameplay, and instead are able to impress themselves with their athletic prowess.

The effective use of sweeping camera angles, combined with graceful yet deathly player moves would have John Woo wondering why MI2 was so crap.

The only frustration have experienced is linearity of play. The course of the game, plot development and ending are very rigidly mapped out. But sit back and enjoy the eyecandy, the spectacularly watchable replays of your action, and you realise why this game took the honours as PS2 game of the year.

2nd Manhunt

3rd Tony Hawk Underground



GameCube game of the year

the winner is...

Mario Kart Double Dash

www.marokart.com



Nintendo had a tough task on its hands, trying to come up with a worthy follow up to what was already an embarrassingly addictive series of games. The cheap way out would have been to simply soup up the graphics, and create a bunch of new tracks but instead, Mario Kart Double Dash, the fourth in the series, is a major upgrade which is pleasing to the eye, challenging to the wrist and still enormously enjoyable.

The overall theme is the same: Ride really fast carts around tracks loaded with obstacles and other racers. This time, however, each character has their own special weapon. For example, Diddy and Donkey Kong chuck giant banana peels onto the track and Mario and Luigi have access to giant five-way fireballs. Obstacles in the road can be nicked by other racers and used as projectiles in their 'no-rules' quest for the Winners Cup.

The 'Double Dash' comes from the addition of a two-player co-operative mode. An interesting concept which is so crazy, it almost works! It's just like having a real-life back seat driver, only this back seat driver isn't a useless pain in the arse. While you're busy controlling the vehicle, your back seat driver punches things, steals stuff, and introduces misery to the lives of other racers.

Whilst this is not the most challenging game from Nintendo, nor is the most graphically intense or detailed in plot, it is rollicking good fun, doesn't take itself seriously and grown-ups shouldn't be shy about admitting to playing it. Except us. Naturally we don't play kids games, much. ;)


2nd Metroid Prime

3rd F-Zero GX



Atomic Reader Awards

15

The background of the entire page is an abstract design consisting of numerous diagonal stripes radiating from a central point near the bottom left. The stripes vary in width and color, ranging from pale yellow to deep orange and red, creating a sunburst or starburst effect.

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